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NEW VISTAS IN RADIO

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Is there any difference between listening to music directly and by radio? I have tried to meet this question in two ways: first, personally and subjectively, as one who has devoted all his life from childhood to making music and trying to understand its true inner nature; and, secondly, objectively, impersonally, trying to find the facts as registered, not by ear, but by instruments of precision.

When we listen to music directly the factors involved are complex, but they can be grouped into three classes: (1) the sound source — singer, violinist, orchestra; (2) the conveying medium, the air between the sound source and our ears; (3) the receiving medium — our ears, which receive the music or vibrations and pass them to those centres in our brain which transform them into states of being and feeling.

Now what happens when we listen to broadcast music? Obviously (1) the sound source and (3) the receiving medium remain the same. But (2) the conveying medium is only similar in the space between the loud speaker and our ears. Before that is reached many

new factors enter. Again these factors are complex, but they can be classed in three groups: —

(A) *Pick-up*. This includes the varying characters and patterns of the sound waves created by the instruments or voices in an empty or full hall, or in a small or large studio, modified by the kind of reflecting or absorbent surfaces formed by the walls, ceiling, floors, and whatever persons or objects there are in the enclosed air-volume. Other variants are the type of microphone used, its degree of responsiveness to various zones of the total audible frequency range, the number of microphones, and the relation in space of all the instruments and voices to each other and to all the microphones in operation.

(B) *Transmission*. This is a very complex process that presents problems for which no one as yet has a complete answer. But one element — amplification — can be understood by every music lover. It resembles in some ways the enlarging of a photograph. If we were to take a negative, and enlarge some parts slightly, other parts to

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twice their original size, others to four times the size, the result would be a distortion, interesting perhaps to those who enjoy the fantastic, but not a true reproduction of the original picture on a larger scale. In the transmission of music, amplification is necessary, but if the amplification is greater in some zones of the whole frequency range involved, certain tones or groups of tones sound relatively louder than others, the harmonies become unbalanced, certain individual notes in a melody stand out suddenly in too great relief, important harmonics or overtones are too weak or too strong, the tone-color or timbre of the instruments or voices is changed and degraded, and the whole tonal mass is thrown into a chaotic state of distortion. The result becomes a caricature, and discriminating music lovers will prefer not to hear in a degraded form music they know and love; and those who hear the music for the first time can have no conception of its true beauty, or of the inspired message it conveys.

To keep the picture simple I have spoken here only of the distortion brought into music by amplifiers; this is only one of the elements that can distort in broadcasting.

(C) *Receiving equipment.* For perfect reception we should need a loud speaker that would respond with equal sensitivity from about 30 to 13,000 cycles per second. All the receiving sets that do not have such a speaker cannot help distorting the music.

Frequency Range

Adequate transmission of music must meet three requirements: it must faithfully transmit (1) the complete frequency range; (2) the complete intensity range; and (3) with the true auditory perspective.

The fundamental principles of radio are a mystery that we may never fully

understand. The greater the scientist, the more clearly he realizes and the more frankly he tells us how little he knows. As we learn, we become more aware of our ignorance. But radio process can be outlined in simple terms. If you talk over the radio the sound of your voice is picked up by a microphone, transformed into electrical energy, amplified, carried by wire to a transmitter, sent out into space as radio frequencies, — or Hertzian waves, — picked up by receiving equipment, transformed into electrical energy, amplified, sent out by the loud speaker as sound or audio-frequencies reproducing your voice. Briefly stated, this is the general process for the transmission of sound whether of speech or music. In a parallel sense, but on another plane, we know the circuit that music follows — from inspiration, through transmission (composer and interpreter) and reception (music lover), back to inspiration. The important question is the degree of faithfulness with which symphonic and operatic music can be delivered in our homes, and the message conveyed in its full value.

At present these types of music come from the radio in incomplete and changed form. The scientific explanation can be simply stated. The character or quality of tone in music is mainly due to harmonics or overtones. At present, many of these cannot be and are not transmitted and received by radio. The result is that such sounds as the muted trumpet or the oboe cannot be transmitted and received faithfully, and therefore frequently come to us in changed or distorted form.

Harmonics or overtones are most easily explained by an example: If you sing a note you probably hear only that single note, which musicians call the fundamental. Above that, however, is also sounding the octave, usually less loud. And above the octave is sounding

another soft tone five notes higher. And another, four notes higher still. And another three notes higher still. And so on. These are the overtones or harmonics and they have simple ratios of vibrations or frequencies or cycles to the fundamental tone. To every single vibration of the fundamental tone the first overtone has two vibrations, the second overtone three vibrations, the third overtone four vibrations, and so on. The relative loudness of the harmonics to each other and to the fundamental is the cause of the quality or timbre or tone-color of a tone. For example, if the high harmonics are louder than the low harmonics and the fundamental, the tone-color produced will be thin and piercing and reedy, like the oboe or muted trumpet or the gamba or reeds of an organ. But if the low harmonics and the fundamental are louder than the high harmonics, the resulting tone will be round and full, like a flute, or a horn played softly in the middle register, or the diapason of an organ.

The adequate transmission of the harmonics in operatic and orchestral music includes frequencies or vibrations as rapid as 13,000 per second. By frequency is meant roughly what musicians call 'pitch'—whether a tone or group of tones is high or low or in the middle register. For example, if you sit at the piano, the notes immediately in front of you or in the centre of the keyboard are in the middle register, those to your right hand in the high register, those to your left hand in the low register. In much the same way, the engineer and physicist speaks of high, middle, and low frequencies or periodicities or cycles. He measures them in time so that the 'A' to which the violinist tunes his instrument has 440 cycles per second. These frequencies can be thought of as alternate condensation and rarefaction of air—as a series of pressures. For the purpose of this writing, differences of frequency or

pitch can be thought of as the contrasting sounds of the high tones of a flute or violin, as examples of high frequency, the mellow sounds of a cello or the lower sounds of a contralto voice, as examples of middle frequency, and the deep sounds of an organ pedal or of the double bass, as typical low frequencies.

Instead of the 13,000 frequencies per second which are necessary for the adequate transmission of orchestral music, radio listeners in most of the homes in this country are hearing, at present, up to about 5000 frequencies or vibrations per second and sometimes fewer. That part of the music which should be conveyed from 5000 to 13,000 frequencies is obviously lost.

The 13,000 frequencies I have mentioned is not a figure set arbitrarily. It results from very close and exact tests, which were made by Dr. Harvey Fletcher, head of the Division of Sound Experimentation of the Bell Telephone Laboratories, and a group of assistants, of which I was one. These tests were made on a mixed group composed of engineers, musicians, amateurs, and others. Our aim was to see up to what periodicity it was essential to be able to transmit sound in order faithfully to broadcast good music for the average ear. We began, of course, with full realization that the response of ears is infinitely varied. It is not too much to say that everyone's ear response differs at least in some slight degree from that of his neighbor. Some of us hear up to 20,000 frequencies per second. Some up to only 12,000. The average capacity is perhaps about 15,000. Our tests convinced us that, for the average ear, up to at least 13,000 is really necessary, and that fewer than that will not carry orchestral and operatic music with complete faithfulness.

The first step toward making it possible to include the missing vibrations between 5000 and 13,000 is, in my opinion, to widen the channels that

were apportioned some years ago by the Radio Commission in Washington. At present these channels are so narrow that the full frequency range necessary for the complete and undistorted broadcasting of good music is practically impossible. Of all the available frequencies for such forms of communication as wireless telegraphy and telephony, distress and other shipping signals, and the radio we know for the sending out of music, lectures, speeches, and so forth, only a part is allotted to the radio we use — and this must be subdivided so as to give each of the transmission stations of this part of the world a channel that will not interfere with adjacent transmitters. There has been a great demand for these channels, and in order to supply this demand the channels have been made narrow. These narrow channels do not permit the necessary frequency range of about 30 to 13,000 cycles per second, but up to only about 5000.

The first and the fundamental need is for Washington to revise its allotment of channels so that they can be broader.

The second step is for transmission stations to send out music with an equal response from about 30 to 13,000 frequencies per second. The more progressive transmission stations are eager to do this. In thus enlarging the frequency range of transmission of music no harm will be done to the broadcasting of the voice. On the contrary, brilliant voices need high harmonics for complete transmission of singing, and even speaking voices need high harmonics for sibilants. Enlarging the frequency range need not interfere with short-wave transmission which gives us a wider radius of effective reception. Short wave and wider frequency range are two different subjects — not necessarily interfering with each other.

The third step is for the makers of

receiving sets to design sets that can receive and give out to the listener with an equal sensitivity of response from about 30 to 13,000 cycles per second. Some of the makers of receiving sets are only waiting for Washington to enlarge the channels before they too enlarge the receiving range of their sets.

These three steps will involve temporary practical difficulties. I am told that, from a commercial point of view, these difficulties are not to be disposed of lightly, but that the farsighted manufacturer will see that a satisfied and expanding radio public is his real objective and is the permanent security of his own commercial interests. From the standpoint of a musician and radio enthusiast, it seems to me that if music can be broadcast more faithfully by employing the latest scientific discoveries, and if the net result of employing these is not only raising the quality of musical sound but also increasing the number of eager and appreciative listeners from coast to coast, then the changes necessary, and the discarding and replacing of a considerable amount of present equipment, can only be regarded as a secondary consideration. In any case, radio equipment is wearing out and being replaced all the time, with the situation as it now is.

There are also certain technical difficulties, for which there may be more than one solution. In offering my own suggestions as to how these problems can be dealt with, I have well in mind that there is more than one way of doing most things. The ideas I am presenting here will, I hope, invite the attention of physicists, radio engineers, and the public to the problem of *what music needs*, and invite consideration not only of my own proposals, but of alternative proposals which experts in various fields have made or may make.

One way of widening the channels might be to zone the country and to

apportion wider channels in such a way that the same channel could be used for a number of zones, so spaced out that they would not overlap and interfere. This would mean fewer channels, wider channels, and intelligent organization of the whole country for radio. All this is possible. Each zone using the same wide channel could broadcast a different programme at the same time. Or some or all of the zones using the same channel could broadcast the same programmes by wiring the stations together. But this wiring system would have to be of high quality. Ordinary telephone wiring systems adequate for speech would not be suitable for music. This kind of zoning might mean that transmission stations would have to adjust their power in order to prevent interference between those zones which would be using the same channel. Obviously, there would be, for a time, some inconvenience to the transmission stations in a general requirement to re-adjust their power. The ultimate result, however, would be a gain to all radio listeners, who would, by this revision or some other plan achieving the same result, be able to hear music and speech in complete and undistorted form.

Intensity Range

What the musician calls loudness and softness, the physicist calls intensity. He measures intensity by units called decibels. Good music needs, in an opera house or concert hall, an intensity range of about 85 decibels. That is to say that, from the softest sounds of an orchestra or operatic ensemble to the utmost sonorities of a great *tutti*, there is and should be a very wide range or difference.

There are physical, psychological, and musical reasons for this. Much of the emotional effect on us of music and its dynamic intensity of mood and ex-

pression depend on gradual or quick increase of loudness (*crescendo*) and gradual or quick reduction of loudness (*diminuendo*). Also sudden accents on one or more notes, or on a chord, or on a melodic outline, either on the top edge, or the lower edge, or somewhere in the middle of the total mass of sound, add at certain moments to the poignancy of the music. Another factor in increasing the eloquence of some kinds of musical expression is the powerful contrast of a great mass of loud harmony followed or preceded by delicate, distant-sounding music.

One of the greatest values of music — its power to evoke in us moods and states of feeling and of being — thus depends greatly upon dynamic contrast and gradation. Of course the potential intensity range of an orchestra or operatic ensemble varies in different concert halls, opera houses, and radio studios. Some of the influencing factors are the texture of reflecting surfaces, the degree of rigidity of the structure to which these surface materials are attached, the size and form of the total air-volume that is vibrating, the rapidity of absorption at various frequency levels, the general reverberation period of the enclosed space, and so forth. For example, the Centre Theatre in Radio City gives — to one conducting in it — the impression of an almost limitless intensity range. Some other halls have so narrow a potential range that music in them sounds monotonous and relatively colorless. Every orchestra varies in intensity range, and even the same orchestra varies with different conductors, for psychological reasons which I am far from fully understanding.

To-day, in broadcasting a symphony orchestra, we are employing an intensity range of about 30 decibels, instead of the 85 decibels that we are using in our concert playing in performing, for instance, music with the immense dy-

namic range of Wagner. In broadcasting, the 85 decibels have to be compressed to about 30, and this is usually done by the engineer at the controls. The control engineer has certain instruments before him, one of which is like the volume control on your radio set. By turning it one way he gives the music the full intensity that is the result of amplification. By turning it progressively in the opposite direction he gradually attenuates or softens the sound of the music. By reducing the loud moments and by increasing the soft parts he compresses the intensity range so that there will be no overloading by loud music and so that the soft music will be easily audible and not covered by the 'noise level,' which is the sum of all the extraneous sound produced by the transmission and receiving equipment, plus audience noise, if an audience is present, as in a concert. This audience noise is often greater than might be imagined. The total sound of several thousand persons turning the pages of the programme book, making other movements, talking or whispering, coughing, the sound of late comers finding their seats, of the opening and closing of doors, is surprisingly high.

The controlling and compressing of the intensity range can also be done by the conductor, who can make the soft passages louder and the loud passages softer, but this devitalizes the music.

For the reception of operatic and symphonic music in the average home, a dynamic range of 85 decibels would not be necessary, but music needs a much greater variation of loudness and softness than is at present possible.

Auditory Perspective

When we listen to music in the opera house or concert hall the complex mass of sonority enters our two ears

from the front, both directly and by reflection, and from the sides and back by reflection only. Our impression is that the major part of what we hear is direct and the lesser part reflected. But the truth is the reverse. The reflected sound in most theatres and halls is very rich and full, and is greater than the directly heard sound. Although we may not be conscious of it, our two ears are hearing slightly different sound-patterns because the reflections from right and left are different in time and in the intensity of all the component parts of the complex sound-mass. Unconsciously we compare these different impressions received from right and left and this comparison gives us the sense of perspective — of a feeling of tonal spaciousness. More of this subject will be included in that part of this writing that deals with 'wired transmission.'

The microphone is a kind of electric ear. In broadcasting, the microphone picks up the sound which is afterward brought by a complicated process to our ears. But the microphone is a *single* ear attached to a *single* circuit or means of carrying the sound to us. To convey music with full and true auditory perspective, we should have, in my opinion, double circuits which could be made to correspond to our method of hearing with two ears and which would give us the tonal spaciousness and beauty of sound that make music so satisfying in a large and well-planned auditorium.

When all the results outlined in (1) Frequency Range, (2) Intensity Range, (3) Auditory Perspective, are brought about, it will be more possible to find the answers to the two great questions of how the cost of radio can best be met and what ought to be the relation of government to radio. First of all we must see clearly what we *need* from radio socially and technically.

Wired Transmission

Music can be conveyed by the radio we now have in our homes — sometimes called 'space radio' — or by wired transmission, sometimes called 'wired radio.'

Space radio has the disadvantages of a compressed frequency range, a compressed dynamic range, fading, and electrical disturbances and static that sometimes ruin reception. Up to this time, physicists have not found a way to protect music that is conveyed by space radio against these extraneous sounds.

Wired transmission, or wired radio, in which the full range of frequencies and the full dynamic range can be transmitted, protects music against fading, static, and disturbances of every kind. With wired transmission, we could all hear, in our homes, in public buildings, in recreation centres, music that would sound exactly as it sounds in the concert hall.

An interesting test of this method of transmission, made on April 27, 1933, shows that it is entirely practicable and that it gives superior results. The test, made by the Philadelphia Orchestra, was sponsored by the National Academy of Sciences and was given and arranged by the research and engineering forces of the Bell Telephone Laboratories.

This is what was done. The full Philadelphia Orchestra played a symphony concert in Philadelphia. The music was picked up by specially designed microphones and transmitted over underground wires into Constitution Hall in Washington. Here, through power amplifiers controlled by special apparatus, I was able to control, in Washington, music made in Philadelphia and to send it forth to the Washington audience of scientists, musicians, music critics, and music lovers. It is an amazing thing that this possi-

bility has existed now for two years and that no use has been made of it.

Nor is the scope of wired transmission limited to its capacity to convey music to our homes with the same quality that it would have in the concert halls. Wired transmission can so increase the intensity range that it would be possible — in a recreation park, for example — to listen to music with a much greater intensity range than is heard in the concert hall. The dynamic contrasts and accents, the slow building up of the sonority to climaxes, the gradual decrease of tone and fading out can be so enlarged — by wired transmission — that the music acquires greater eloquence, energy, and significance.

Nor is even this the sum of the full possibilities of wired transmission. Through it, by a selective process, it is possible so to enrich certain parts of the tapestry of sound, bringing them out in relief, that the three-dimensional character of music is greatly emphasized. To illustrate certain aspects of this three-dimensional conception: At a certain moment the music may be high and low and deep. In other words, some sounds will be high in pitch, others low in pitch, but another mass of sound may be markedly louder or softer than the first two groups, and so give the impression of being nearer or farther than the first two groups, thus bringing the dimension of *depth* to the total mass of sound. In some ways this is like certain kinds of painting which have the two dimensions of a flat surface plus the third dimension of depth or relative 'planes of distance. In painting, this depth is sometimes the result of perspective, sometimes of almost magical subtleties of color relations, as in Cézanne. In music, depth is often achieved through highly sensitive relations of loud and soft planes of sound, as in Debussy. Depth in music can also be suggested through

tone character. For example, a melodic line or tone-mass can sound soft yet *near*, or it can be played or sung so as to sound soft but *far away*. Chalyapin is a master of this power to achieve depth by suggestion. He can make his voice soft but *intimate* and *close*, like an intense whisper that is either caressing or threatening, as he does in *Boris*. Or he can make his voice soft and *remote* as he does at the end of the 'Volga Boat Song,' giving the impression of distant and ruthlessly indifferent desolation. A similar distance of tone can be suggested also by instruments — in the hands of highly sensitive and imaginative players. Naturally the same qualities are required in the listener.

Another type of depth or tonal perspective is achieved when the sound actually comes from right and left, high and lower, far and near — for example, when the violins on one side of an orchestra play an answering phrase to the cellos on the opposite side, or when a near trumpet is answered softly by a distant trumpet, as in *Carmen*, or as in *Tristan*, when the English horn plays behind the scenes, or the hunting horns are heard in the distance, becoming increasingly remote and soft. Or again, in an important passage of oboe or muted trumpet, the high sounding harmonics which give the individual character and quality of tone to these two instruments can be increased in intensity during the duration of the solo. Or if the deepest sounds of the contrabass or organ pedal have a significant melodic outline, that part of the frequency range can be so intensified that the fundamental sounds of the melody and of the harmony above it will take on greater power and sonority. Or a middle voice in the orchestral fabric, such as the French horn or the cello, can be brought out into high relief.

In other words, the potentialities of music, with reference to dynamic

power and frequency, have reached new heights of plasticity and controlled power, never dreamed of in the past as possible of attainment. Great composers, like Wagner in the *Nibelungen Ring*, and Bach in such music as the 'Toccatà and Fugue in D Minor,' undoubtedly dreamed of powerful contrasts of this kind, but were unable to produce them by the limited means available in their lifetime. Yet, — except for the above described demonstration in Washington and in Philadelphia, — nothing has been done to give these new possibilities of sound to the vast music-loving public throughout the country. If a gold mine of great capacity were found, or a subterranean sea of petroleum were discovered, it would be quickly developed. But a means whereby Everyman can hear music with overwhelming beauty and eloquence in any part of our vast country, no matter how remote, is neglected and left unused in a laboratory.

The Vistas Opened Up by Wired Transmission

Our standards of good orchestral tone, of the relations of individual instruments to each other, of groups or choirs of instruments to each other, of solo voices, of voices in chorus, and of all these above-mentioned voices and instruments sounding together, — as, for example, in opera, — have been built up by the memories and experience of the best performances we have heard — best as to singers, instrumentalists, instruments, acoustics, setting. The music lover of each city remembers the most satisfying performances of opera and symphony that he has heard in the opera house and symphony hall of his city, and these constitute for him a norm and standard — the conception of tone that is for him 'right' and 'natural' and ideal. Other conceptions are for him 'wrong'

or 'artificial.' If in going to the festival in Bayreuth or Munich he has in his memory the sound of voices and orchestra under other acoustical conditions, but now prefers the way they sound at the festival, the former standard of tone is modified and a new conception or norm is established.

I am not sure that these ways of establishing criteria any longer hold. I should like to state the reasons simply, but with a degree of detail. With the new possibilities of sound being opened up to-day by wired transmission and other laboratory experiments, I suspect that there is no longer any unchangeable norm in our minds of good tone and tonal relation. Through constant experience of listening by radio, and laboratory experimentation with electrically produced and reproduced sound and wired transmission of music, our horizons have become so vastly extended that formerly accepted standards and definitions of 'good' and 'bad' and 'natural' and 'artificial' tone have become less dogmatic and more fluid. Or it might be better to say that they are no longer adequate but give a limited and incomplete view of a field which is every year becoming more extended in our consciousness.

It may perhaps be a revolutionary and unwelcome idea to some that the definitions of sound and of tone that have held good for a long period no longer are able to limit the possibilities of music and sound. But there have been gradual or apparently sudden changes of centre like this in other spheres of our life and experience. For example, the changing of theories of the solar system issued the same challenge to men of various ages. Once men believed that our earth was the centre of the universe and that the sun and planets revolved around it; later came a broader view that the earth revolved around the sun; and later a still more extended view of the

vastness of space, and a theory that our sun might not be the centre, but only a relatively small part of a vast system of magnetic and orbital relations between masses of matter suspended in space. In the course of years and of moving from one fixed belief to another we have at present come to the point where scientists prefer to rest their conception or interpretation of time and space upon a belief in relativity. Just as the former Euclidian attitude that there are axiomatic truths, not questionable and not in need of proof, is no longer tenable but is replaced by the vast and elastic conception of relativity, so are the theories and standards of tone and tonal relations no longer unchallengeable in the field of music and sound.

What, then, *is* the 'natural' sound of an orchestra? Some years ago there would have been many willing to answer the question in terms quite definite, but the enlarging conception of sound, and new possibilities of controlling and modifying it, inevitably lead us to distrust the certainties of years not long past. The whole sphere of sound has become vastly freer. Those that know this to be true and realize the scientific basis for it become much more open-minded — and much more modest — because they know that *they do not know*, whereas those who are unwilling to depart from the safe certainties of an earlier era know only the dogmas which naturally grew out of a more limited experience than is now the privilege of the physicist and musician who is in intimate contact with, and has absorbed, the most recent experiments in sound and the broader conceptions and richer knowledge that are the birthright of everyone to-day.

It is not too much to say that wired transmission has opened possibilities that may ultimately revolutionize the whole world of music. Clearly it is for

us to see that those possibilities are used not capriciously but with true artistic motivation and discipline, not as an end in themselves but as a means to greater freedom and range in expression.

It used to be that, in making a great crescendo, the possibility of ascending to the mountain height of sonority was limited by the coördination of the mind, the nervous system, the muscles of the hands and lips of the players, and by the power and tonal range of the instruments. Even if the composer or the listener found it possible to dream of higher mountain peaks, he could not achieve them by means within his reach.

The facilities of wired transmission extend these possibilities enormously. Now they are really limited only by the intake of the human ear and by the brain centres to which the ear reports and in which the sensations of sound are received and in some mysterious way changed into emotion, mood, and states of being. When in India, I used to look at Everest and Kinchinjunga in the Himalayas, and it seemed impossible to me that man could ever climb to the highest levels of these masses. Now the airplane has flown up to them and higher still. Wired transmission is the airplane which, in the control of those that know how to use it, could lift millions of listeners to higher peaks of musical experience.

Electrical Production of Tone

We can listen to tone and music from a variety of sources — the human voice, musical instruments, space and wired radio, recorded music either by disk or by film, and electrically produced tone. When we listen to music from our radio set, the tone is produced by voices or instruments and then carried to us by a method we call broadcasting. But it is possible to produce

the tone, not by voices or instruments, but by new types of instruments which do not have bows and strings like those of the violin, or tubes of wood or metal like those of the wood-wind and brass instruments, but in which tone is produced by oscillators, which in principle vibrate like a tuning fork, or by sound waves imprinted on film, and by some other principles of which I am not yet at liberty to speak. The Theremin was one of the first of these instruments. All of the various types of these instruments have means to control frequency, intensity, timbre, duration. Of course they are to be played by musicians, just as the violin or piano or any other instrument.

If we wish to think clearly and without prejudice about these new instruments, we should compare them with the instruments of the past to see which are the more mechanical in structure, and, when played by musicians who understand their full possibilities, which are more free and have a greater range of musical expression. Examined without prejudice, all the instruments of the orchestra have important mechanical features. The violins, violas, cellos, double basses, all have bows which must be adjustable and capable of a certain tension, with strings capable of a still greater degree of precision of tension, stretched over a frame that must be light and sensitive to vibration, yet strong enough to remain rigid with the four strings under high tension, and with a bridge, front plate, post, back plate, so perfectly adjusted and in contact that the vibrations, begun by the bow setting the strings into vibratory motion, are conveyed to all parts of the instrument so as to set into vibration the surrounding air. The wood-wind and brass instruments all have bores of various calibres, either cylindrical or conical, and complicated systems of keys which open and close certain apertures or addi-

tional lengths of tubing. In brief, they have *mechanisms* without which they could not function except in a very primitive and limited way.

The electrical instruments also have their mechanical side, but when they have been more fully developed they will have greater range in their powers of playing loud and soft, high and low, legato, staccato, glissando, and greater variety of tone-color. For example, on our present instruments it is difficult to play a really perfect legato because the breath becomes exhausted, or we must change the direction of the bow because of its limited length. There are no limits to the legato of the electrical instrument. All our orchestral instruments are constantly becoming 'out of tune' during performance. Many of our wind instruments are never in tune because of their faulty structure. The only limit to playing in tune on some types of electrical instruments is the ear of the player. Others are so constructed that they never need tuning and it is impossible to play out of tune on them. These are of the 'tempered scale' type. So that in several ways the electrical instrument is not more mechanical than our present imperfect instruments. Since the development of the electrical instruments is still in a very early stage, they are not to be fairly judged by present performance.

Electrical production of tone may some day revolutionize the manner of composing music. At present there are two processes: (1) The composer indicates by black notes on white paper (a method of musical notation which is unfortunately far too limited) his musical ideas as expressed through rhythm, melody, harmony, counterpoint. (2) The singer, player, or conductor tries to breathe life into these notations by making them vibrate in the air as music. This double process may in the future become a single process, as when an artist paints a picture.

Through electrical production of tone, the composer will be able to record directly into sound his musical ideas instead of first writing them on paper. This will not prevent other musicians later from making new interpretations. These musicians will again record directly into sound their own ideas, or their differing conceptions of the ideas already expressed by former composers.

The Character and Quality of Radio Music

If all our equipment and methods were brought up to date and in line with the most highly developed technique and instruments now lying unused in laboratories, the range of our programmes could be broadened. By short wave there would be available to us the best programmes from all the European countries. In addition there could be programmes from Canada, Mexico, and the South American Republics, and occasionally interesting special programmes could be arranged from Africa, Japan, China, India, Java, Bali, offering us the national music of those lands, a music different from ours, but well worth our attention and the intimate study made possible by radio.

For our own United States programmes the field for selection is rich. Some of the varied possibilities are:—

(1) Brief talks by experts on subjects that would interest all of us if clearly focused—in the fields of science, the different arts, and the social questions that intimately concern us all in our daily life.

(2) American folk music, including, on the one hand, the powerful primitive jazz mainly created by our musicians of Negro origin, and, on the other hand, sensuous romantic jazz, folk songs from various parts of our country, such as cowboy songs (there are hundreds of these and they are purely

American), songs of the Virginia mountains, songs and dance music of the many tribes of those we so erroneously call Indians. This 'Indian' music would be difficult (although not impossible) to pick up because it is an integral part of the religious life of our aboriginal Americans and is sacred to them.

(3) Opera, both 'light' and 'grand.'

(4) Symphonic music — North, Central, and South American and European.

We are in a significantly creative stage in the development of an *American* musical culture. Musically speaking, we have passed the central point of the depression and are on our way upward. As the country builds itself again into a new social and economic life, there is bound to be — and the process has begun — a new expression of the creative forces of American life in music.

The rhythm of our life is different from that of any other country. In any age and any country, it takes a certain amount of time for the expression of fundamental forces to be released. The process of expression in America is now moving beneath the surface, and through color, form, motion, and sound the ideals and forces of American life are emerging into art forms. Not only are we building up a distinctive American music, but we are also developing distinctively American ways of presenting it. We need to see to it that our methods of presenting music shall accord with our national and cultural needs. We need, for instance, to build our concert halls and opera houses in the spirit of our own era, making them express the rhythm of our own present civilization, rather than reflect the ideas and artistic traditions of other ages and other lands. In our larger cities our concert halls should have greater seating capacity. The cost of tickets could then be less. The

halls should be designed by American architects to meet the functional needs of ourselves here and now.

The Listener's Responsibility

If the radio listener wishes to make the most of his receiving equipment and hear the better type of programmes in a way that will give him or her the best results as recreation or as personal cultural growth, or both, the radio set must be used with understanding. In tuning-in on the wave length desired there is a central point of maximum clarity and truth of reception. On either side of this point is a zone which still gives reception, but in increasingly distorted form as the tuning adjustment departs from the central point of exact tuning. The low frequencies filter out, the balance of the music is destroyed, and new and very untrue tonal relations are brought into the sound picture. I have often been in the house of friends who were listening to a good programme well transmitted, but their tuning adjustment was off centre and they did not seem to be conscious that the whole sonority composition was false and distorted. There are other practices which interfere with hearing music at its best. Although it is common knowledge that there are clear limits to the effective functioning of radio tubes, and that they become exhausted and must be renewed, many enthusiastic radio listeners do not keep their equipment in good condition in this respect.

On every receiving set is a volume control by which the total loudness of the music can be increased or decreased, and a tone control by which the intensity of high frequencies can be increased or decreased. On the better type of receiving sets there is also a third control by which the low frequencies can be increased or decreased in intensity. In other words, a certain

zone of the total frequency range is first amplified, and then attenuated, and this attenuation is under control by the listener. It is very important to use the volume control and tone controls *in relation to each other* and also in relation to the acoustical conditions of the room where the listeners are. There are probably not two rooms in the world with exactly the same acoustical conditions. Some of the factors involved are the total air-volume and form of the enclosed space, the texture of the reflecting or absorbing surfaces, such as walls, floor, ceiling, rugs, hangings, furniture, mirrors, curtains, windows, doors, and so forth, the position of the receiving set in relation to the form and volume of the enclosed air-mass and to the listeners. Radio is developing a consciousness of the relations possible between middle, high, and low frequencies in the minds of a vast listening public interested in music, and this one element alone is going to have important musical and cultural effects.

In addition to the great differences of acoustical conditions in our rooms at home where we listen to broadcast music, we all have another varying factor in listening to and in evaluating music — our ears. There are probably no two ears in all the world which hear alike. In other words, every ear has its own degree of sensitivity to various parts of the frequency range. This is probably why two musicians of roughly similar degrees of musical talent and experience will differ sharply in their opinion about concert halls and the way music sounds in them. They hear music differently because their ears, if tested, would show a different response to different types of sound and music. A musician who truly understood all the factors involved — the nature of sound and its mathematical basis, the highly personal and individual response of his own ears, man's vast ignorance of the

psychological elements in music and our reaction to its subtle stimuli — would never make dogmatic *ex cathedra* statements about any aspect of music because he would be fully conscious that all his reactions are personal and subjective and true only for himself *at that time* — because our response changes with the unceasing changes that are going on inside us each day and each hour. It is necessary for the music lover and broadcast listener to understand the few simple principles just stated. With these in mind he will know how to adjust the controls of his receiving set. It is to be hoped that all sets will have at least the three controls: —

- (1) Volume (general amplification)
- (2) High frequency attenuation
- (3) Low frequency attenuation

All three are necessary to adjust the tonal relations of music to the acoustical conditions of our individual rooms where we listen.

All the above refers to the mechanical and objective. Still more important are the subjective and psychological ways that the listener has of controlling the value to himself of what he hears by radio. It is useless and a waste of time and energy for an operatic ensemble or a large orchestra to send out the greatest music and for transmission and reception to be improved if the listener, by reason of fatigued ears and nervous system, is not in a condition to receive the message and inspiration of the music. Those who without discrimination leave the radio on all day, so that it becomes a meaningless and valueless background of noise for all their occupations, degrade this wonderful instrument of radio and themselves, so that they fail to benefit by it. On the contrary, they are harmed by it because their mind becomes so fatigued that the ear tunes out automatically. But those who discriminate and listen only to worth-while

programmes, both of speech and of music, and take the trouble to be quiet and in a condition to concentrate, will receive the highest pleasure and self-development and inspiration.

Children and the Radio

In many homes throughout the country children are steadily building up a conception of music and speech on the basis of what they hear on the radio. The majority of small children are very creative musically, especially up to the age of seven or eight. It is important not to blunt the edge of their creative tendency in music by limiting them to so frequent a form of musical intake that all their energies are engaged in attending to what they hear constantly by radio and no time or likelihood is left for the spontaneous creation of rhythm and song that so often goes side by side with their play. Also it is important that they do not receive the impression that the adult-made music they hear from the radio is the only music of value, and so become ashamed of the music they make themselves, a music usually free and original and nearly always so flexible in rhythm and melodic outline that it cannot be written in our limited and incomplete method of musical notation.

It is of national importance to encourage the creative powers in music that most children have naturally and unconsciously. I have often noticed that when young children are playing together in a group or alone they become deeply absorbed in the object of their play and every now and then begin to sing, perhaps unconsciously. Often what they sing has words in a language of their own, invented at the moment; at other times it has words in the language they hear spoken by their parents. Sometimes it is simply melody without words; at other times it is almost pure rhythm — a kind of joyous

and energetic outcry. Often the melody is purely spontaneous, not something they have heard or been taught. Sometimes the rhythm they create is associated with what they are doing. At other times the rhythm — although strongly marked — has no obvious connection with what they are doing, but makes a free contrasted rhythmic counterpoint with their play. The main impression I have from watching and listening to little children at these times is that they are unconsciously creating rhythm, melody, and words, and that this creation seems to come from a very deep part of their being.

Fading Out of Musical Creation

I have noticed that at about the age of eight many children begin gradually to lose the musical creative powers that have been theirs from the age of about eighteen months. It would be very valuable to know why this happens. It might be that their being taught nursery songs composed by others, or their hearing music by gramophone or radio, has resulted in giving children the impression that the music they create themselves is of no value, and that they should try to imitate or reproduce the music they hear in some form from adults.

I believe we can hope to retain creative musical power throughout life, because it is done by the Pueblo Indians of Taos, Zuni, and the nomadic Navajo Indians; also by the inhabitants of Java and Bali and other islands of the Pacific; and by the natives of Ukraine and Southeast Poland. Their spontaneous creative songs are often associated with their work, such as grinding corn or sowing seed.

Finding means to preserve the musical power that exists in most children is only part of a greater possibility, to understand and give the best conditions for growth for *all* the creative

powers in ourselves and our children. There is probably a very intimate relation between our physical creative powers as expressed through sex and physical action and our glandular, mental, emotional, and psychic creative powers. They probably form one great unified organism, and the stimulation and growth of one part of our creative powers will probably react beneficially on all the others, and so lead to a rich growth of personality, which in turn will lead to greater personal happiness and greater power of service to others. If these observations have truth, then it becomes an important question of national scope as to how radio may be made to minister to the development of children's musical life and prevented from conventionalizing and distorting and inhibiting it.

Recreation Centres

As the machine does more of the work that formerly we did by hand we shall all have more leisure. How shall we fill this free time with pleasure and self-development? Some will dissipate. Others will recreate. I have a picture in my mind of great recreation centres where we might all go in our leisure hours and find opportunity for freedom and relaxation, whether in gay sport or in quiet study. These centres would be like large parks, some parts of which would have tall trees and gardens, others flat places for sports, others water for swimming and rowing and sailing. There could be theatres for drama, opera, cinema, *variété*. Restaurants to suit various tastes and needs. Museums and schools for adults, adolescents, children. Kindergartens and play schools for very young children, with nurses, educators, and psychologists who are sympathetic to children. In one part of the gardens might be a high tower from which at night colored light would be diffused, which in time would create a

new art of color in motion and form. From this tower music of several kinds might be sent out over this part of the gardens. Sometimes good jazz for dancing, sometimes gay music of the type of Sousa's marches, sometimes the highest kind of symphonic music. This music would be sent out at times of the day that would suit the majority. Perhaps every day two periods of jazz for dancing, both open-air and under cover; about three times a week the finest symphony concerts; at other times singers, violinists, pianists of the highest order.

The music could be sent out by wired transmission. The orchestra or other musicians would be in a large hall, so that those who like to see as well as hear music being made could be in this hall instead of in the gardens or covered parts of the gardens. The tower would be so high, and the loudness of the music so adjusted, that thousands could hear it in the gardens, either walking about or sitting. The music would be clear and full but not obtrusive. It could be directed to certain parts of the gardens, but be practically inaudible in others. This could all be done because there is practically no limit, in wired transmission, to the control of loudness, tone-color, and the direction in which the music is sent.

Of course these recreation centres must not be profit-making, but each type of amusement should be as inexpensive as possible, and aim only to make cost and income equal. In other words, these recreation centres should try to supply us with the various kinds of amusement and recreation of mind and body which we all need, and which would give us all our share of the joy and poetry of life.

Radio as Universal Communication of Thought and Feeling

By speech, we can cause to pass from one mind to endless other minds the

ideas developed in the realms of science, art, and government.

Radio, if well used, could be one of the greatest methods the world has ever developed for combating ignorance. It could be an instrument for making the peoples of the earth so understand each other at a distance that they would be less likely to lose their balance of mind and allow those passions that lead to international warfare to overwhelm their reason. The human race is evolving into a broader sense of international relation, but the speed of the evolution is bitterly slow. Radio, used to its full technical and scientific capacity, and guided by wise and far-reaching vision, would be a valuable instrument for bringing the world to a new international understanding and technique. In achieving this kind of understanding, I do not, of course, suggest that the transmission of music is the sole medium. The written and spoken word will be immensely powerful in this regard. Although this is not my field, the im-

portance of presenting new concepts of human relations over the radio is clear. And in this whole matter of building up a far-reaching international understanding, music could play a clarifying and inspiring part. By bringing East and West into touch with each other, radio can endlessly stimulate the flow of ideas and the expression of life in art. The truth of this increases our responsibility for giving more good music over the radio, and bringing transmission and reception up to the most recently developed methods known in the laboratories.

In broadcasting, two features are important — programme and technique. The standards for both are set, in the long run, by public taste. If the public steadily and firmly demands a higher average of quality in programmes, and transmitting and reception equipment that is *up to date*, both will be created. A few isolated individuals cannot bring this about. It is Everyman who must ask and who will receive.

THE \$10,000 GALLON OF OIL

An Adventure in Graft

BY BERWIN KAISER

[AUTHOR'S NOTE: I have a friend who is a contractor in New York, but he is not like any contractor you ever met. His business is probably the strangest in the world. His organization consists only of himself and his secretary; he has no equipment other than his nimble brain; but for some years now he has been making a comfortable living at what he calls 'outwitting the grafter at his own game.' A product of the sidewalks of New York, he worked his way through the College of the City of New York by clerking nights in the Railway Mail Service. During the war he had his first taste of handling construction materials and supplies in the Transport Service, and, on being mustered out, he went headlong into New York's business whirl — supplying tons of this and carloads of that to city, state, and federal agencies. With a fanatical hatred of civic corruption, a sixth sense for the wiles of large-scale graft, and a frantic curiosity about what it actually costs to make and deliver supplies to the government (as contrasted with what the government pays for them), he was peculiarly equipped to wrest fat contracts from firms which had long enjoyed a monopoly of them. His primary object, like that of every man in business, was to make money for himself, but it has been a source of much satisfaction to him that his ingenuity has also saved

the government hundreds of thousands of dollars. I have listened to him many evenings, talking about his exciting adventures, painting a picture of graft from a point of view that was wholly new to me. The following is one of his stories as he told it to me.]

I

I'M in the contracting business. Chiefly on government, state, and municipal bids.

I am not a specialist. I frequently bid on anything that comes along — anything on which the government, a state, or a city offers specifications. It may be oil. It may be sand. It may be anything in the world from shoe-laces to sheep manure.

I usually start from scratch, which means that I find out exactly what's wanted, then determine what the wanted article is made of. Then I go about rounding up sources of supply, and estimate my costs of delivering so I can submit a bid.

Now the contracting business, as everyone knows, has to contend with every form of graft. It happens that I am not a reformer by instinct. And I'm not a graft-fighter by profession, either. But I frequently resort to the tactics of either the one or the other.

As a matter of fact, I've found there's

good pay in the reform game, and a thrill around every corner in baiting graft. To be perfectly honest about it, these are my chief reasons for playing the game. I make what you would consider a decent living out of it.

I have never been under the delusion — even for a minute — that I could reform the grafters, or that I could drive them out of business. I'll leave that to others. And I wish them luck.

II

Now about this \$10,000 gallon of oil. . . .

It was in 1929. One of the largest government arsenals had advertised that it wanted to purchase thirty-five thousand gallons of oil.

The arsenal in question happens to be a storage place for millions of dollars' worth of guns, cannon, and other pieces of artillery. Naturally, as long as the United States remains at peace with foreign nations, so long must these munition pieces be kept absolutely rust-free.

So this oil was to be used as a rust preventive. If you know anything at all about rust-preventive compounds, you know you can make them any of a dozen ways. That was the big loophole in the proposition — and I put my neck right into it.

They didn't specify the definite composition of the oil. But they did state the purpose for which they wanted it, and the tests they were going to apply to it. Between the lax specifications and the rigid tests for the oil, anything might happen. I knew that from the start.

The tests the arsenal proposed were these. First, a highly polished piece of steel was to be coated with the oil and then subjected to a spray of salt-water solution for five consecutive days. That happens to be an honest and severe test for any rust preventive.

If you ever have the urge to go in the rust business, apply salt water to steel and you'll be well on your way.

Another test they proposed was to place one of these oil-coated pieces of steel on the roof of a building for something like thirty days. The elements would then do their worst.

They even had a third test, — an ultra-violet-ray test, — but I won't bother you with the details of it. You can gather easily enough that while the government might have been lax on specifications for the ingredients, it was certainly protecting itself on performance.

But it was more than mere protection. My story will show you why.

With the latitude on the ingredients so wide, — and with price determining whether or not I should get the contract, — I had almost nothing to go by in deciding what figure to submit. So I started, as I always do, from scratch.

Scratch in this case was the Standard Oil Company of New Jersey, which maintains a large and competent laboratory for just such problems. They had a 'slushing oil,' they told me. They felt certain it would pass the ordinary rust-resisting tests, but they were not so sure it would stand up under the salt-spray test.

You don't have to be an astute business man to see that if I accepted the obligations of a contract of this kind, and if the material later failed to pass the tests, I should have on my hands seven thousand five-gallon cans of oil with little commercial value — or the practical equivalent of a very pretty kettle of fish.

So I was obviously gambling when I accepted the Standard Oil offer of thirty-three cents a gallon, with no guarantee on the salt-spray test. But, as I should have said before, gambling is part of graft, whether you're in it or fighting it. I was pretty certain that

the strangely indefinite specifications and the decidedly severe tests could mean just one thing: Whoever took that contract would take it at a stiff price.

I made *my* price stiff. I submitted sixty-three cents a gallon, and with it, of course, a bond guaranteeing that I would fulfill the contract. If you care to do a little figuring, you will see that this amounted to slightly less than 50 per cent profit. On 35,000 gallons, a rather tidy sum.

III

I was low bidder. The contract was mine. Then things began to happen.

I called the arsenal long distance. I wanted two further points of information.

Were there any other bidders?

There was *one* other bidder. I'll call him the XYZ Oil Company of Chicago.

And what did he quote?

His price was ninety-three cents a gallon. Mine, to repeat, was sixty-three. This meant a difference of more than ten thousand dollars over my bid. And I was going to make a fat profit, too!

I asked the arsenal to allow me to send them a five-gallon sample of my rust preventive for their tests. But the major to whom I spoke was more accustomed to giving orders than to accommodating contractors. I would please send at least a carload of the oil, which, as he carefully reminded me, I had obligated myself to furnish the government and which would have to pass *all* the tests.

Standard Oil of New Jersey made up the carload shipment of oil at their Bayway plant. And while the oil rolled over the rails I crossed my fingers, and kept them crossed.

Ten days later I opened a telegram which read like this: —

FIRST CARLOAD RUST PREVENTIVE COMPOUND REJECTED FOR FAILURE TO PASS SALT WATER SPRAY TEST STOP MATERIAL URGENTLY NEEDED STOP UNLESS ANOTHER CARLOAD MEETING SPECIFICATIONS SHIPPED AT ONCE WILL CANCEL CONTRACT AND PURCHASE MATERIAL IN OPEN MARKET CHARGING THE DIFFERENCE IN PRICE AGAINST YOUR BOND.

The government meant business.

So did I.

After I'd talked things over hastily with the Standard Oil chemists, I decided there was just one thing to do. I took the next train out, to lock horns with the government and a decidedly irritated major.

Next afternoon the major and I drew our battle lines.

I said that I'd worked out the oil ingredients with chemists of one of the biggest oil companies in the world, and certainly the best-known one. If they could n't produce an oil to meet the tests, who could? I was n't exactly being tactful, and I did n't hesitate at hinting that perhaps the tests were impossible to fulfill.

The major was n't even vaguely ruffled. He politely introduced me to his chief chemist who handled the details of the rust preventive. This chemist had conducted an intensive study of rust prevention — a matter of many months. It did n't take him long to convince me that he was as expert on the subject as I was ignorant.

Ignorant on rust prevention — but not exactly ignorant about this contracting business.

When he told me that there was, in his opinion, only one company in the whole United States capable of producing an oil which would meet those tests, then I was curious. Who would n't be?

He did n't mind telling me that it was the XYZ Oil Company of Chicago.

He said there was one thing, and only one thing, for me to do. I should

default on the contract. The arsenal would then purchase the compound from the next highest bidder. And the loss — or the difference of over \$10,000 between our prices, as well as the loss of the carload already shipped and rejected — would be laid squarely in my lap.

This began to look serious. So I went back to my hotel room to worry. But I also managed to do a little thinking.

I figured this way: —

If I could possibly secure a sample of the XYZ product, Standard would be wizard enough to duplicate it. And since it was a formula which, as I guessed, a United States Army chemist had presumably worked out . . . well, if an unknown oil company knew how to produce it, another could learn.

With just the smallest kind of sample, a mere cupful, the whole problem of saving millions of dollars' worth of army equipment, not to speak of my own problem of saving myself a good many thousand dollars and no end of grief, and all my chances of ever doing any business whatever with the government again — why, they'd all be solved. Maybe just a spoonful of that oil would do it.

IV

So I went to Chicago.

It was a one-man hunt for XYZ's pet brand of rust-stopping oil. You won't be especially interested to know that I put up at the Lake Shore Hotel, but I have never been able to forget the fact.

I started for the offices of XYZ. I was amazed (as who would n't be?) to discover they were situated in a strictly residential district on the northwest side of the city. And the offices themselves consisted of nothing in the world but the front parlor of an old railroad flat, plus a desk of ancient vintage and a telephone.

This was the setting in which I found Mr. Moore, the president, vice president, secretary, and treasurer of the XYZ Oil Company. The head offices, mind you, and the only offices of a concern furnishing the United States Army with thousands of gallons of oil at almost a dollar a gallon.

I introduced myself as a representative of the Ace Machinery Company of York, Pennsylvania. I told Mr. Moore that I'd learned he was making a very fine rust-preventive compound which possibly we could use in our plant. I went on to explain that much of our machinery had to be idle in the winter, and that we wanted to coat it with a rust preventive that would give us every possible protection.

About how much was I figuring on? Oh, say about five hundred gallons. How much would his price be? One dollar and a half a gallon. Was it really the very best that could be had for the purpose, as I had heard? Certainly! Why, at the very moment, he said, one of the departments of the government was negotiating with him for a large quantity. They had already put it to all kinds of rigid tests, and it had passed all of them successfully.

I said his price was not unreasonable (though it most certainly was), and if he would let me have a gallon sample I would take it to our York factory, have a test made, and send him my order for five hundred gallons.

At a dollar and a half, Mr. Moore was giving away nothing. And, chuckling at the prospect of a good initial order, he gave me my sample gallon.

I could chuckle, too.

I smuggled the sample under my arm and taxied back to my hotel. I figured that sample was worth about ten thousand dollars to me.

I was in my room throwing things into my grip to catch the train when the telephone rang.

'This is Mr. Moore of the XYZ Oil Company, and I'm downstairs in the lobby.'

He was, was he?

Mr. Moore went on to explain. Just after I'd left his office, it seems, he'd discovered that he'd given me the wrong sample. He wanted it back. Of course, he'd parcel-post the correct sample to my factory in York.

He would, would he?

'Mr. Moore,' I said, 'won't you wait just a minute in the lobby, and I'll be right down.'

I'd be down, all right.

It came to me in a flash that perhaps someone at the arsenal had telephoned Mr. Moore about me. You might call it a warning. I'd call it a tip-off.

So I slipped the sample gallon of mystery oil into my grip. I did *not* take the elevator. I ran down the seven flights. And I picked a back stairway for my run.

I was in a cab. I had not paused for the conventional courtesies of paying my hotel bill. That would have to wait.

The Twentieth Century was not due to leave for half an hour. But I boarded

it, and went at once to the men's room. And I locked myself in.

If you like to collect wise-cracks, I'll tell you what I told the porter to get myself into that room. I told him it was an emergency. It was, was n't it?

I stayed locked in until the train was on its way.

V

A day later, Standard of New Jersey had analyzed my sample. It was precisely the same oil as the slushing oil which I had shipped to the arsenal, but there had been added to it (and all credit to the genius who thought of it) seven per cent of rosin oil. The rosin oil, as you may guess, was the cheapest part of the whole compound. But it did the trick when the oil was put to the salt-spray test.

It did the trick for me, too. I fulfilled the contract.

And because all good adventures in graft have to have a moral ending, I'll take pains to remind you that this story has one, too. I had saved the government, and the taxpayers, and myself, the rather nice sum of \$10,000.

(In a subsequent issue, 'The \$4000 Snow Shovel')

HISTORY AND THE LOUSE¹

BY HANS ZINSSER

I

THE formula for writing biographies of individual men and women has been thoroughly worked out. Apart from the recent introduction of psychoanalytical methods and a little libido, it has remained more or less the same since Plutarch. In writing the biography of a protoplasmic continuity like typhus, it becomes necessary to develop a new formula. While, on the one hand, we can avoid many of the keyhole indiscretions of the Strachey, Ludwig, Maurois school, we are — in this instance — forced to give considerable space and attention to other unpleasant subjects more likely to repel than to attract. For typhus spends prolonged and, for its survival, essential phases of its existence within the bodies of lice, fleas, and rats. There may be other hosts not yet determined. But of these we know; and we must, therefore, follow our virus through these phases and endeavor to get the point of view of these fellow creatures which, though regarded with loathing by the superficial, are sufferers even as we are, and quite as innocent of intentional malice. For, though we acquire the disease from them, they get it from each other and from us. So there would seem to be as much to be said on one side as on the other.

Obviously it is much more difficult

¹ Dr. Zinsser's paper is a part of his forthcoming book, *Rats, Lice, and History*. — EDITOR

to present the louse's point of view in its relationship to man than to elucidate the influence exerted, let us say, upon Chopin by George Sand, or upon Mark Twain by the respectable relations of Elmira, New York. We cannot, therefore, dismiss the matter with a brief scientific description of the sojourn of typhus in the louse. To achieve our purpose we must endeavor to present the case of the louse in the humane spirit which a long intimacy has engendered. For one cannot carry pill boxes full of these little creatures under one's sock for weeks at a time without developing what we may call, without exaggeration, an affectionate sympathy; especially if one has taken advantage of them for scientific purposes and finds each morning a corpse or two, with others obviously suffering — crawling languidly, without appetite, and hardly able to right themselves when placed on their backs.

The louse is foremost among the many important and dignified things that are made the subjects of raucous humor by the ribald. Despite the immense influence of this not unattractive insect upon the history of mankind, it is given, in the *Encyclopædia Britannica*, two thirds of a column — half as much as is devoted to 'Louth, a maritime county in the province of Leinster,' one fifth as much as is allowed for Louisville, Kentucky. This creature, which has carried the pesti-

lence that has devastated cities, driven populations into exile, turned conquering armies into panic-stricken rabbles, is briefly dismissed as 'a wingless insect, parasitic upon birds and mammals and belonging, strictly speaking, to the order of Anoplura.'

The louse shares with us the misfortune of being prey to the typhus virus. If lice can dread, the nightmare of their lives is the fear of some day inhabiting an infected rat or human being. For the host may survive; but the ill-starred louse that sticks his haustellum through an infected skin, and imbibes the loathsome virus with his nourishment, is doomed beyond succor. In eight days he sickens, in ten days he is *in extremis*, on the eleventh or twelfth his tiny body turns red with blood extravasated from his bowel, and he gives up his little ghost.

Man is too prone to look upon all nature through egocentric eyes. To the louse, *we* are the dreaded emissaries of death. He leads a relatively harmless life — the result of centuries of adaptation; then, out of the blue, an epidemic occurs; his host sickens, and the only world he has ever known becomes pestilential and deadly; and if, as a result of circumstances not under his control, his stricken body is transferred to another host whom he, in turn, infects, he does so without guile, from the uncontrollable need for nourishment, with death already in his own entrails.

If only for his fellowship with us in suffering, he should command a degree of sympathetic consideration.

II

The louse was not always the dependent, parasitic creature that could not live away from its host. There were once free and liberty-loving lice, who could look other insects in their

multifaceted eyes and bid them smile when they called them 'louse.' But this was even longer ago than the Declaration of Independence, for it took the louse many centuries to yield up its individualism. It was so long ago that we have no records of any neolithic or even Neanderthal louse from which we can trace a clear line of descent. Indeed the ancestral problem has remained an extraordinarily difficult one. Many erudite students — preëminently Enderlein — have been inclined to derive the Siphunculata or sucking lice from the Rhynchota or true bugs, largely on the basis of similarities of the mouth parts. But this idea is rejected as truly preposterous by Handlirsch (*Die Fossilen Insekten*) and his followers, who trace the descent of our lice from the fur- and feather-eating Mallophaga (bird lice) for reasons unquestionably well founded upon considerations far too intricately technical for superficial discussion.

We could not do justice to a subject so fundamental without extensive citation from the works of specialists. We desire merely to indicate that this problem of ancestry has led to dissension among louse scholars, — on occasion not entirely without passion, — though, unlike the question of the descent of man, it has not involved religious feelings.

But the opinion of the learned Professor Handlirsch appears to be the one most generally favored among students of lice. Modern lice consist of two closely related varieties: the biting lice, or Mallophaga; and the sucking lice, or Anoplura. These orders are parasitic developments, probably, of the ancient group of pre-cockroaches, from which are also derived our present cockroaches and termites. The pre-cockroaches, or Protoblattoidea, are fossil forms of the upper Carboniferous Period, and too far removed to concern

us. Our own companions, the blood-sucking ones, are probably derived from the fur-scameng insects, through the Psocidæ or Corrodentia — small winged or wingless creatures, the best-known representatives of which are our common book lice. The latter group are not the direct ancestors of the louse, but spring with them from a common stem. The conditions are analogous to the relationship of the higher apes and man — a kinship that is too often misunderstood as a direct descent or ascent (however one looks at it) like the rungs of a ladder, rather than, more properly, like twigs of the same bush.

Ancestral origin from the same stock may be both upward and downward. In the case of the louse, we know relatively little about the matter, since we must judge from anatomical data alone; and the evolution of purely parasitic from free-living forms would seem to be a downward rather than an upward development. In the case of man, the relationship with the monkeys is surely much closer than that of the lice with the Psocidæ. The anatomical and blood-chemical similarities are exceedingly close ones, and — we being the arbiters of appraisal — we assume that we are the higher forms, since we include mental and spiritual qualifications, without really knowing much of these attributes among the apes. A distinguished biologist has recently claimed, on the basis of anatomical and physiological studies, that there is a much closer similarity between man and the young, rapidly-developing anthropoid than there is between man and the adult ape. According to this, we may be looked upon as arrested or maladjusted apes; while the apes, passing through this stage, go on to adulthood, where they cease to struggle for the things they cannot achieve and arrive at reasonable contentment. This is in keeping with Goethe's view that

the man of genius is a permanent adolescent.

However this may be, it is likely from evidence that somewhere in the legendary past of louse history an offspring of a free-living form not unlike our book louse found that life could be infinitely simplified if, instead of having to grub for food in straw, under tree bark, in moss or lichen, in decaying cereals and vegetables, it could attach itself to some food-supplying host, and sit tight. It is one of the few instances in which nature seems extremely logical in its processes. The louse sacrifices a liberty that signifies chiefly the necessity for hard work, the uncertainty of food and shelter, and exposure to dangers from birds, lizards, and frogs; loses the fun of having wings, perhaps; but achieves, instead, a secure and effortless existence on a living island of plenty. In a manner, therefore, by adapting itself to parasitism, the louse has attained the ideal of bourgeois civilization, though its methods are more direct than those of business or banking, and its source of nourishment is not its own species.

Thus, at any rate, arose the parasitic lice, — first, perhaps, the biting ones, the Mallophaga, — and there developed, showing the infinite elasticity of nature: —

The chicken louse
Trinoton, the goose louse
The slender duck louse
The pigeon louse
The turkey louse
The biting guinea-pig louse
Trichodecter, the horse louse

— to mention only a few. Out of these, or parallel with them, came the animalcules with which we are chiefly concerned. Not content with a diet of feathers, fur, and dandruff, these varieties — cast off by a kind Providence upon thin-skinned, warm-blooded animals — discovered by an

incomprehensible cleverness (or perhaps by an accidental scratch and an occurrence not unlike the discovery of roast pig by the Chinese) that under their feet ran an infinite supply of rich red food. They developed boring and sucking structures, and thus arose:—

The hog louse
 The dog louse
 Polyplax, the rat louse
 The foot louse of the sheep
 The cat louse
 The short-nosed ox louse
 The monkey louse
 Our own *pediculi*: the head louse
 and the body louse of man

III

It is with the last two that we are chiefly concerned, and they are so closely related that even now, by an occasional *mésalliance* resulting from the meetings of young people about the neck band, a body louse may go native and interbreed with a head louse. The crab louse we may neglect. He is probably of distinct generic origin and a creature that merits neither respect nor sympathy—not even terror.

Although the human head louse first came into the hair of primitive savages from fur-bearing animals, even in this respect the give-and-take does not appear to have been entirely one-sided. Ewing suggests that the Ateles monkeys may have received their lice from natives; and the similarity between the various monkey lice and those of man is so close that they can interchangeably feed on one or the other host without harm. We have ourselves fed two hundred Arabian head lice on an East Indian monkey for weeks at a time, with relatively low mortality. Such interchange of hosts is not usually possible. A louse fed on a foreign host, in most cases, suffers a painful and fatal indigestion.

Ewing further suggests that the spider monkeys obtained their lice from man when the latter reached tropical America in his dispersion from the Old World. The fur of the Ateles monkeys is very similar in coarseness and abundance to that of the head of man, and the blood of this monkey is physiologically more nearly like that of man than that of some other monkeys of the New World. These reflections of Ewing are of great importance in connection with our biography, since the question often arises whether typhus was present in America before the conquest of Mexico. If, as Ewing states, the phylogeny of the Ateles-infesting lice has followed that of their hosts, it is likely that the lice have been in America for a long geological period. The genus Ateles or spider monkey—we quote Elliott from Ewing—has a wide area of distribution, extending from south central Brazil as far north as the state of Vera Cruz in Mexico, and from the Pacific coast of Ecuador to the Atlantic coast of Brazil.

There are two distinct American groups of *pediculi*, according to our authority, one of them confined to man and one to monkeys. 'The foremost infesting man are largely hybrid head lice, the pure strains of which were originally found on white, black, red, and yellow races living in their original geographical ranges. The monkey-infesting lice of America, so far as known, fall into distinct species according to the hosts they infest, thus indicating to a certain degree at least a parallel phylogeny for host and parasite. If the monkey hosts procured their lice from man, it was not from recent man, but from man that lived tens of thousands of years ago—long enough to allow species differentiation.'

Once established on the head of a savage, the louse passed from race to

race, acquiring slight changes of form and feature in the process, so that to-day it would seem that we can deduce some information as to human racial relationship from the characteristics of the lice found in different parts of the world. The *Pediculus humanus nigritarum*, or head louse of the African Negro, is slightly different from the head louse found on European and modern American heads. The latter appear to be hybrids, with a strong strain of the *nigritarum*. The *Pediculus humanus americanus*, found on the prehistoric scalps of American Indian mummies, is again different, and this ancient parasite has been taken from the scalps of living Indians, together with the European head louse — one among the many acquisitions of civilization.

Our eminent authority, Ewing, studying large series of lice from living Americans, has observed that there was no correlation between louse types and racial types of the human hosts. It appears that America, the melting pot of human races, has also become the melting pot of lice. Ewing became convinced that he was dealing in the American race largely with hybrids of different racial types, and this conviction was strengthened by the relatively recent discovery by Bacot that the head lice of man would intermarry with the body lice and give fertile progeny. This led Ewing — realizing the futility of obtaining any information concerning original American lice from the examination of the heads of our modern intelligentsia — to search for these insects in the scalps of American mummies. At first his search was in vain, because, although he found nits plentiful upon the scalps of pre-Columbian Peruvian mummies, he found no specimens of mummified adults. Later, however, through Dr. Lutz of the American Museum of Natural History, he secured the scalps

or hair samples from twenty prehistoric American Indian mummies. Three of these had not only nits, but lice in all stages of development. It was found that the insects from Peruvian mummies were slightly different from those taken in the southwestern United States, and that all the lice from prehistoric mummy scalps showed differences from some of the lice obtained from a living Indian. It is probable, according to Ewing, that our living Indians have acquired the Caucasian and the Ethiopian head louse, and now enjoy hybrids between these two and the American types. It might be mentioned, also, that the American mummy type is distinct from Fahrenholz's *Pediculus humanus marginatus*, or Japanese variety.

Shipley tells us that the louse adapts its color to that of the host, so that we have the black louse of Africa, the smoky louse of the Hindu, the yellowish-brown louse of the Japanese, the dark brown one of the North American Indian, the pale brown one of the Eskimo, and the dirty gray one of the European. Again, though the evidence is vague, this prehistoric American louse has been described as quite similar to the Chinese head louse and to the lice found upon Aleutian Eskimos — another argument for the *Völkerwanderung* across the Behring Straits.

From the several head varieties arose the body louse, when naked man began to wear clothing. Primitive races as a rule have no body lice. Advancing in civilized habits with his host, the louse now began to attach its nits to the fibres of the clothing instead of to the hairs of the body — thereby gaining a degree of protection from direct attack and a greater motility.

In the development of the head louse into the body louse, many very interesting changes of habit have taken place. Free lice are not often

found on the skin. The insects remain in the underclothing in contact with the body, except when feeding, and even at such times they may remain attached by the legs to fibres of the cloth.

Soon after conception, the mother louse begins to lay eggs, at the rate of five or more a day, and this is kept up for about thirty days. The eggs are then attached to the fibres of the clothing by a sort of cement substance which forms the nit. Hatching occurs at varying periods, according to the temperature. At normal temperature of the human body, hatching may occur in a week, but, if repeatedly exposed to cold or kept at a lower temperature, this process may be delayed for over a month.

In getting out of its egg, the young nymph shows extraordinary enterprise. First of all it forces open the little lid, or operculum. This gives it the first fascinating glimpse of freedom; but the hole is too small to permit escape. With great ingenuity, the little animal begins to swallow air from in front and eject it from behind, gradually increasing the pressure until eventually it pops out into the great world. It is then a finished little louse, a perfect image of its parents; but, if not fed, it dies within a day or two. If properly taken care of, it moults and in from four days to a week goes into what is spoken of as the second nymph stage, and from that by a similar process into a third nymphal stage, and throughout this period enjoys all the privileges of louse existence except the sexual one. It does not become a sexually mature louse until two or three weeks after emerging from the egg.

IV

In the study of animal evolution, there seems to have been an almost complete neglect of social forces which,

if we listen to Fabre, Maeterlinck, Wheeler, and others less eminent, appear to play extraordinary rôles in the organization of insect life particularly. The admirably efficient feudal matriarchy of the beehive seems quite superior to any comparable achievement in general contentment developed by man. And the communistic organization of the termites, as described by Professor Wheeler, appears to represent the ultimate perfection of modern Russian aspirations — more perfectly conceived than man seems capable of conceiving them. Yet, in the so-called lower ranges of animal life, we attribute to 'instinct' or evolutionary forces the results which men struggle toward with what they call 'intelligence.' It is at least reasonable to suppose that alterations in human society and government are equally subject to external forces,² though man's greater restlessness brings them about with greater speed.

We have already mentioned the possibility that the parasitism developed by the louse was due to the forces of a bourgeois desire for easy living on the part of the individuals carried by chance to a location where food was simply obtained and life was secure. It is equally possible that there may have been, among these colonists on an abundant soil, a growing conviction that all lice were born equal, that liberty and equality and fraternity should govern society, and that in this way the discouragement of wings, of independence, of adventurousness, may have led to a 'New Deal,' a stabilization at the lowest level of louse capacities.

However this may be, the louse — like man — has, for one reason or another, failed to develop the highly complex civilization of the bee or

²Professor L. J. Henderson's *Seminar on Pareto* would undoubtedly prove of invaluable assistance in expanding this idea. — AUTHOR

the ant. Such development has perhaps been unnecessary because of the infinite and ever-renewed supply of abundant territories for exploration. He lives, blissfully irresponsible, like the Polynesians before the advent of Captain Cook, roaming on the land of plenty, where nature provides warmth, shelter, the odors he loves best, copses for love, and secure undergrowth to which his chosen mate can attach her nest. Under his feet is an inexhaustible supply of the food he prefers, and he has but to sink his hollow stylet into a tender skin to procure his two or three daily meals, with much less trouble than it takes the aborigines to knock a coconut off a tree. In his unrestrained simplicity, he is much like Rousseau's noble savage — so abhorrent to Professor Babbitt — leading a physically and emotionally unrestricted life.³ If, with Professor Babbitt, we deplore this, we cannot — we regret to say — look forward to any changes for the better in the near future.

With us, a spiritual deepening is imminent, with the complete exploitation of our continent and the exhaus-

³ In one important respect, this accusation of Rousseauism is not entirely just to the louse. Though in his other appetites leading an apparently effortless and licentious existence, sexual arrangements are uniquely wise. Nature has provided that the nymph — that is, what may be called the high-school or flapper age of the louse — is not yet possessed of sexual organs. These do not appear until the fully adult form develops, and reproduction is thus postponed until a responsible age is reached. Adolescent Bohemianism, 'living oneself out,' 'self-expression,' and so forth, never get beyond the D. H. Lawrence stage among the younger set. How much physical hardship and moral confusion could be avoided if a similar arrangement among us could postpone sexual maturity until stimulated by an internal secretion from the fully established intellectual and moral convolutions of the brain! The loss of copy this would entail for Theodore Dreiser, William Faulkner, Ernest Hemingway, and others would be amply compensated for by gains in other directions. — AUTHOR

tion of those easy pickings which, for two hundred years, have allowed us to remain, like the louse, undisciplined.⁴ But the louse seems indefinitely committed to the materialistic existence, as long as lousy people exist. Each newborn child is a possible virgin continent, which will keep the louse a pioneer — ever deaf to the exhortations of his Van Wyck Brookses and Mumfords to better 'evaluate his values.'

As far as we can ascertain, since man has existed the louse has been his inseparable companion. Unlike other parasites, he never leaves his host, except as the consequence of accident or disaster. When he is cast out, or when his host perishes, he is doomed unless he can promptly find another. This fact has led many religiously inclined louse scholars to speculate upon the problem of whether Adam and Eve were lousy. Cowan quotes a writer in the *Gentleman's Magazine* for 1746 as saying, in regard to this fascinating question, 'We can hardly suppose that it [the louse] was quartered on Adam and his lady — the neatest pair (if we believe John Milton) that ever joyned hands. And yet, as it disdained to graze the fields or lick the dust for sustenance, where else could it have had its subsistence?' The question can never be settled. We *do* know, however, that lice are present on the most ancient mummies from many parts of the world, and that these insects were found by early travelers on all savage races encountered by them.

Cowan, in his *Curious Facts in*

⁴ Had the Pacific Ocean extended to the west bank of the Mississippi, we should probably have, by this time, developed what is so ardently wished for by our younger critics — a distinctive American culture. With us, the latent seeds planted at Concord a hundred years ago may be expected to burst into flower when the vitality of our race is driven inward by the failure of external resources for material exploitation. — AUTHOR

the History of Insects, quotes Wanley's story of the eating of lice by the Budini, a people of Scythia, and the same habit — still prevalent among monkeys — is recorded of the Hottentots and the American Indians. By some of these peoples, as well as by the mediæval English, the practice was supposed to have medicinal value — particularly against the jaundice. In the same extraordinary book we find citations from Purchas's *Pilgrims* concerning the strange habits of the natives of Malabar, who, 'if Lice doe much annoy' them, call upon certain religious and holy men who 'will take upon them all those Lice which the others can find and put them upon their [own?] head, there to nourish them' — an act of benevolent self-sacrifice which alone should have served to canonize them.⁵

Pertinent to the now highly probable assumption concerning the prevalence of typhus among the Aztecs before the advent of Cortez is the tale cited from Torquemada. 'During the abode of Montezuma among the Spaniards, in the palace of his father, Alonzo de Ojeda one day espied . . . a number of small bags, tied up. He imagined at first that they were filled with gold dust, but — on opening one of them — what was his astonishment to find it quite full of Lice!' Ojeda spoke of this to Cortez, who then asked Marina and Anguilar for an explanation. He was told that the Mexicans had such a sense of duty to pay tribute to their ruler that the poorest — if they possessed nothing else to offer — daily cleaned their bodies and saved the

lice. And when they had enough to fill a bag they laid it at the feet of their king.

V

It is not necessary, however, to confine ourselves to the primitive or ancient races to illustrate the important and intimate rôle played by lice in the social life of the human race. Among the unfortunates of our own day, these little creatures are still sufficiently prevalent even in the most civilized communities — although, in places as decadent as Boston is said to be by Upton Sinclair, it is often difficult to find a needed supply of the insects, unless one knows one's way about. In our experience, on one occasion when a supply of uninfected lice was needed immediately for feeding on a suspected case of typhus fever, it became necessary, by appeal to the scientific enthusiasm of a municipal police captain, to place under temporary arrest a colored gentleman who was the only individual easily discovered who was in possession of the coveted insects. It is needless to add that he was, of course, immediately released — after generously supplying us from his ample store.

Yet, as everyone who has really been to war knows, let the water supply fail, or soap become scarce, or a change of clothing be delayed — it takes no time at all before the louse comes back to its own. It was not so long ago, indeed, that its prevalence extended to the highest orders of society, and was accepted as an inevitable part of existence — like baptism, or the smallpox.

Lice have even been important in politics. Cowan tells the story of the custom prevailing in Hurdenburg in Sweden, where a mayor was elected in the Middle Ages in the following manner. The persons eligible sat around a table, with their heads bowed

⁵ Weizl informs us that, when sojourning for a short time among the natives of Northern Siberia, young women who visited his hut sportively threw lice at him. On inquiry concerning this disconcerting procedure, he was embarrassed by learning that this was the customary manner of indicating love, and a notice of serious intentions. A sort of 'My louse is thy louse, etc.' ceremony. — AUTHOR

forward, allowing their beards to rest on the table. A louse was then put in the middle of the table. The one into whose beard the louse adventured was the mayor for the ensuing year.

The manner of living throughout the Middle Ages made general lousiness inevitable. In England, in the twelfth and thirteenth centuries, the houses of the poor were mere hovels, often with only a hole in the roof to let out the smoke of the central fire; and in cold weather the families were huddled together at night without changing the simple garments — usually a single shift — which they wore in the daytime. Washing was practically out of the question, and the better classes — not very much more comfortable in their badly heated domiciles — wore a great many clothes, which they rarely changed. MacArthur's story of Thomas à Becket's funeral illustrates this.

The Archbishop was murdered in Canterbury Cathedral on the evening of the twenty-ninth of December. The body lay in the Cathedral all night, and was prepared for burial on the following day. The Archbishop was dressed in an extraordinary collection of clothes. He had on a large brown mantle; under it a white surplice; below that a lamb's-wool coat; then another woolen coat; and a third woolen coat below this; then the black, cowed robe of the Benedictine Order; under this a shirt; and, next to the body, a curious haircloth, covered with linen. As the body grew cold, the vermin that were living in this multiple covering started to crawl out, and, as MacArthur quotes the chronicler, 'the vermin boiled over like water in a simmering cauldron, and the onlookers burst into alternate weeping and laughter.'

The habit of shaving the head and wearing a wig was no doubt in part due

to the effort to hold down vermin. Gentlemen and ladies all over Europe resorted to this, but the wigs they wore were often full of nits. Pepys speaks of this in several places, complaining about a new wig he had bought which was full of nits. 'Thence to Westminster to my barber's; to have my Periwigg he lately made me cleansed of its nits, which vexed me cruelly that he should put such a thing into my hands.'

Even in the highest society the questions of lice and scratching were serious problems; and the education of children, even in the best circles, included a training of the young in relation to their vermin. Reboux, speaking of the education of a princess of France in the middle of the seventeenth century, says: 'One had carefully taught the young princess that it was bad manners to scratch when one did it by habit and not by necessity, and that it was improper to take lice or fleas or other vermin by the neck to kill them in company, except in the most intimate circles.'

He tells another story illustrative of the universal lousiness even of the aristocracy. The young Comte de Guiche had made himself unpopular with the King by casting amorous eyes upon Madame, the King's sister-in-law. He sent the Comte's father to announce banishment to the son. The latter was not yet out of bed when his father arrived. As the old Marshal stood in front of the bed, a louse crawled out from under his peruke, began to crawl along the deep furrows on the old man's forehead, skirted the edges of the little thickets made by the eyebrows, and crawled back under the hair of the wig. The entire lecture was missed while the Comte de Guiche was watching the adventures of the insect.

Even long into the eighteenth century, lice were regarded as necessities.

Bacteriologists for a generation have wondered whether the presence of colon bacilli in the intestines, because of their universal occurrence, may not have some physiological purpose. For similar reasons, as wise a man as Linnæus suggested that children were protected by their lice from a number of diseases.

In the story of George Washington by Rupert Hughes, we find the following paragraph on 'Rules of Civility,' copied by Washington in his fourteenth year: 'Kill no vermin, as Fleas, lice, tics, etc. in the sight of others, if you See any filth or thick Spittle, put your foot Dexteriously upon it; if it be upon the Cloths of your Companions, put it off privately, and if it be upon your own Cloths, return thanks to him who puts it off.'

Since colonial days, these things have changed. The louse has been

banished completely from fashionable society, and even though — among our middle classes — there may not be a motor car in every garage, there is almost invariably a bathtub in every cottage and flat. And more and more the habit of keeping the coal in the bathtub is disappearing, among even the most oppressed. The louse is confined, in consequence, to the increasingly diminishing populations of civilized countries who live in distress and great poverty. But there are still many of these with us, and there are regions of the earth where life is still primitive and where bathtubs remain luxuries. The louse will never be completely exterminated, and there will always be occasions when it will spread widely to large sections of even the most sanitized populations.

And, as long as it exists, the possibility of typhus epidemics remains.

FROM WILSON TO HITLER

BY FRANK H. SIMONDS

I

THE current month of January will mark the fifteenth anniversary of two events — the coming into effect of the various treaties of the Paris Conference, and the coming into existence of the League of Nations. To-day, moreover, it is no longer the mere expression of congenital pessimism to assert that together these two grandiose undertakings have utterly failed to provide the world with that state of peace to which it looked forward not merely hopefully, but even confidently, half a generation ago, when Woodrow Wilson took ship for Paris.

If we look back over the history of the League of Nations during its fifteen years of existence, the explanation of its present plight is not difficult to discover. Originally the League represented an attempt to found a permanent political institution upon a temporary popular emotion. It was launched upon the assumption that because in 1919, when the Paris Conference met, peoples were still under the empire of the agonies of the preceding four years of war, they would always be prepared to subordinate national rights and interests to the larger necessities of world peace and order.

During the previous century, the masses in the three Western democracies — France, Great Britain, and the United States — had, after revolutions, civil wars, and endless failures, at last learned to accept as final the

will of the majority, as expressed by Congress and Parliaments. Therefore it was imagined that peoples everywhere would similarly accept as definitive the verdict of an international parliament assembled at Geneva.

Not less vital to the success of the League experiment was the further assumption that all nations, beginning with the United States, would not alone submit to the authority of Geneva, but, in addition, contribute men and money to give effect to that authority if it were challenged. For unless the League was to have both authority and the means to render that authority effective, then, in the very nature of things, it was condemned in advance to futility and failure.

The design of the League thus constituted a direct break with the whole conception of the nation-state system, with its dogma of absolute sovereignty, and an instinctive reversion to the tradition of Rome. So far as history records, there has been only one era of general peace, and that was during the centuries in which the civilized world was included within the frontiers of the Roman Empire. The essential characteristics of the *Pax Romana* were laws, courts, and police sustained by the authority of Rome herself, and backed by the forces of the mighty empire. When that empire fell, there was an end of organized peace in the world. Nor was it restored with the rise

of the modern state system, because at the bottom of that system lay the doctrine of sovereignty.

Woodrow Wilson's League constituted an attempt to restore the *Pax Romana* by combining the older conceptions of authority and force which belonged to the Roman Empire with the modern system of nation states. Such combination was possible, however, only as the nations of the world were prepared to delegate to Geneva that authority and power which were prerogatives of Rome and the basis of her greatness. In a word, the League represented an effort to create a union of sovereign states in order to put a term to international anarchy both political and economic.

Always the success of the experiment depended upon the willingness of peoples everywhere to accept as definitive the will of the majority of nations precisely as those of the Western democracies had learned to accept as definitive the will of majorities within national frontiers. For under democratic forms there can be no other source of authority, and without authority there cannot be order.

II

It is essential to establish this primary truth, because otherwise the cause of failure at Geneva remains obscure. Thus it is customary to ascribe that failure to the nature of the peace treaties, the character of post-war policies of certain nations, the rise of dictatorships in Germany and Italy, the recrudescence of nineteenth-century imperialism in Japan, the onset of the Great Depression and the consequent rise of economic nationalism. Last of all, the refusal of the United States to join the League is estimated a cause of ultimate collapse at Geneva.

In reality all of these things are, themselves, no more than symptoms

of the disease which has proved fatal to the League, and that disease is nationalism, itself inherent in the system of sovereign states. For what Wilson proposed was in effect a partnership of peoples — and primarily those of the Great Powers — to establish peace and order in the world. But it is a perfectly sound principle that at the basis of every partnership there must be a parity of interest. Men unite to do business together because there is the promise of greater profits in combination than in competition.

Between the seven Great Powers there was manifestly no parity in interest. On the contrary, thanks to the geographical position and their material resources, two — the United States and the British Empire — enjoyed complete security and all the essentials of prosperity. Two more — France and the Soviet Union — were completely satisfied with their economic circumstances, but, owing to their geographic position, did not possess security. As to the other three, — Germany, Italy, and Japan, — their economic circumstances were such that they were confronted by the prospect of declining standards of living, and therefore by the prospect of social upheaval, unless the more fortunate peoples were prepared to modify their policies in respect of tariffs, currencies, and immigration.

Thus, in the very nature of the situation, the two Anglo-Saxon nations were called upon to undertake responsibilities for the security of France and the Soviet Union, and to make sacrifices to ensure the prosperity of the Germans, the Japanese, and the Italians which were not to be balanced by any similar contributions of these other peoples. Together, Britain and the United States at Paris undertook to impose a new international organization upon the world, but quite obviously they could not expect the other

nations to accept the programme unless it bestowed strategic security upon one group and economic security upon the other.

To the minds of both the American and the British peoples that constituted a prohibitive price to pay for a peace which in their own respective cases seemed little menaced at the moment. As a consequence, the United States Senate rejected the Treaty of Versailles and thus kept America away from Geneva. Somewhat later the British Parliament rejected the Protocol, which, in its turn, bound the British to defend the frontiers of the member nations against aggression and to mobilize their army and navy for that purpose on the call of Geneva.

Together these two actions plainly demonstrated that the two great English-speaking nations were unprepared to subordinate their sovereign rights to international control. Once Washington and London had spoken, the illusion of Geneva's authority was shattered. No longer was it possible for the French and their allies in Europe, and for the Soviet Union when it eventually returned to international association, to discover in the League any resource to assure their patently threatened frontiers.

Nor for the Germans, Japanese, and Italians was there any promise that through Geneva they might obtain relief from their material circumstances, which were becoming progressively more intolerable since all were compelled to support great and growing populations upon an exiguous territory poor in natural resources. They were dependent upon the outside world for the raw materials essential to their industry, for food for their growing populations, for homes for their surplus numbers. But to meet these needs they had to sell their goods and export their labor. And if the tariffs and immigration laws of the more fortunate nations

rendered this impossible, then, in Mussolini's picturesque phrase, their choice was between suffocation and explosion.

After 1924, when the resolution of the American and British peoples was made clear, bases of association between the three groups of powers were nonexistent. For, while the Anglo-Saxons continued to press for peace, they were equally unready to meet the French requirements of security based upon the status quo, or the German demand for revision of that status quo, not merely territorial, but economic as well.

III

During the next few years the Anglo-Saxons undertook to substitute the principle of moral for physical guarantees of peace. There was, so the United States and Britain asserted, a force for righteousness resident in the public opinion of mankind which would rally to the cause of peace, were any nation to resort to violence. And that force would clothe the decisions of Geneva with irresistible strength, with a strength far more efficacious than that which could be provided by military, naval, or economic sanctions. Obviously this new doctrine of moral sanctions was conveniently calculated to permit the Anglo-Saxon countries to serve the cause of world peace inexpensively.

But did such a thing as world opinion actually exist? Or, even if it did, could it overleap national frontiers and rouse the conscience of a people whose government had resorted to violence to such a pitch that they would compel that government to change its policies and abandon its purposes? That question found definitive answer when Japan passed to the offensive in Manchuria and Geneva undertook to mobilize world opinion. Such mobilization did take place, but it utterly failed to penetrate beyond Japanese frontiers.

On the contrary, the press and public

opinion of Japan rallied to defend their own government. Thus when, a year after the event, the League responded to a *fait accompli* of conquest by the Lytton Report, the Japanese Government, with indignant approbation of the public opinion of the nation, left the League. What, then, was left of the illusion of world public opinion as the sole and sufficient guarantor of world peace?

Simultaneously with the Japanese crisis the Disarmament Conference arrived. The issue there presented was simple. Every consideration of justice dictated that Germany should be permitted parity in means of defense with France and all other countries. On the other hand, every instinct of self-preservation dictated that the French should refuse such parity as long as their own security was thereby certain to be compromised. Two rights were thus squarely in shock, and solution was, in practice, impossible save as the British and the Americans were prepared to invest the League with the means to guarantee French security, and therefore with the possibility of bestowing justice upon the Germans.

But Great Britain and the United States were not willing. No longer able to argue that world public opinion was a sufficient force to prevent aggression, the United States now substituted a proposal to come to conference in crisis. It would not send ships and men to meet aggression, but it would dispatch delegates to discuss aggression at Geneva. As a matter of fact, Britain and the United States had already done that much in the Manchurian crisis, and the Japanese troops still remained in Manchuria — now become Manchukuo. Obviously, then, what the American and British people were willing to do — all that they were prepared to do — was to talk. That was the limit of their undertaking.

France, Czechoslovakia, Poland, Ru-

mania, Yugoslavia, and latterly Soviet Russia, were little impressed with such a pledge. All of them looked across disputed frontiers to gathering storms. The fate which had overtaken China might befall them at any moment. Accordingly, they were not satisfied with the prospect, for, while the British and Americans were doubtless ready to sign another Lytton Report, and perhaps even refuse to recognize annexations following invasions, they would do nothing to assist in the forcible expulsion of the invaders. Since, however, nothing more was obtainable, they rejected all proposals for parity and therefore justice for Germany. As a consequence, Germany quit Geneva.

IV

The last and in many ways the most devastating misfortune of the League was the Economic Conference. For that really marked the transition from one problem of peace to another, from the era of conflict which had been dominated by the spirit of ethnic nationalism launched by the French Revolution to an age of competition overshadowed by the spirit of economic nationalism which had its origin in the Industrial Revolution. The question of peace, with all its historic complexities, did not arise directly. But that of sovereignty did.

Woodrow Wilson had set out to make the world politically safe for democracy; at the London Conference the question was posed whether it could be made economically tolerable. The American President had built his structure upon the principle of ethnic self-determination, but now it was the question of economic self-sufficiency which was coming to the fore. The Great Depression had driven all nations to tariff, currency, and subsidy devices which in the aggregate had reduced the world alike to economic anarchy and uni-

versal prostration. Here was one final opportunity for Geneva to prove its efficacy. It had been unable to secure peace, could it now restore prosperity?

Inevitably the same old question arose, the question of the willingness of all peoples to subordinate their parochial interests and policies to a common end. And at London all the nations great and small, called in a conclave under the auspices of the League, were agreed upon a programme: for them stabilization of currency was the inescapable first step to recovery. The American delegation had come to London in the same belief. But suddenly, from beyond the Atlantic, the imperious voice of the American President proclaimed that for his country stabilization was impossible because it was likely to be disastrous to his domestic programme. As a consequence the London Conference collapsed.

What, then, was left? Like every other human institution, the League had been designed to produce certain results, to achieve a well-defined end. Like every other political instrument, it was, too, bound in the end to be subjected to the test of operation. It had to demonstrate its use or futility. Not forever could the annual assemblies meet in Geneva to adopt inspiring resolutions which were swiftly transferred from the platform to the archives without further effect. For eleven years it had been able to evade consideration of any of the great issues which divided the larger nations and continued to trouble the tranquillity of the world.

In 1931 the League had had to deal with the Manchurian crisis, and its action had ended in complete fiasco. In 1932 it could no longer dodge the disarmament issue, after seven years of fruitless discussion in commission. But, once assembled, the Disarmament Conference began in deadlock and died a little every day thereafter. Although

Geneva could no longer escape the problems posed by the Great Depression, the Economic Conference called to solve them perished between night and morning as the result of a single transatlantic cable. Concomitantly the problem of Austria, having been considered as a juridical question and referred to a World Court to receive not a legal but a political judgment, flamed into the July *Putsch* in Vienna in the summer of 1934, and thereafter continued to scatter sparks among all the open powder magazines of a continent.

V

There is the record. Was a record ever clearer, or a failure more complete? What, then, we may ask, is wrong with the League of Nations? The answer is devastatingly simple. With the League itself nothing is wrong; with the assumptions upon which it was based, everything. Above all, the League crashed because it could not do justice, ensure security, provide prosperity; and it could do nothing in any of these directions because it lacked authority and force. And it lacked authority and force because the sovereign nations would not bestow them upon it. Deprived of them, it was condemned to the fate of the Continental Congress, the Aulic Council, the Polish Sejm of the pre-partition period, forever paralyzed by a *liberum veto*.

Precisely as long as the League lacked authority to do justice and to bestow security it became the instrument of the fortunate powers which had both security and prosperity, and the tool of those which, having the essentials of prosperity, sought security. It was offered to mankind as a substitute for war. As a consequence, it was obliged to provide the things which hitherto had been obtainable only by conflict. All history is the record of the rise of

man from slavery to liberty, of nations from servitude to independence, of peoples from poverty to prosperity. The Settlement of Paris in 1919 was not a terminal station; at most it could be only a milestone. The march would be resumed.

Again and again in history the attempt has been made after war to abolish future war by freezing the status quo of victory for all future time. Always, moreover, the attempt is made in the name of peace. That was what was attempted at Vienna in 1815. But because the aspirations of many nationalities for liberty and unity were ignored, Slav, Latin, and Teutonic peoples after 1815 appealed from injustice to violence and obtained independence and unity by war. The argument for peace — for permanent peace — was no more cogent after 1919 than after 1815. Nor were the injustices and inequalities of the Conference of Paris less unmistakable than those of the Congress of Vienna.

To be sure, a new note was creeping into international relations. Woodrow Wilson had his eyes fixed upon the political issues of the past. His mind was concentrated on self-determination as a prescription for peace, and he did not even suspect that self-sufficiency would soon become a far more vital issue. He thought in ethnic terms in a world whose most vital problems had become economic. Nevertheless, the institution which he created was equally available to deal with ethnic and economic issues.

But in order to deal with the issues inherited from the past, and with those which the future was already pressing upon its notice, the League had to be a substitute for war. For untold thousands of years, men had been striving for certain things — for justice, equality, and prosperity. If now, at last, a new way had been found to reach the old goal, mankind, naturally hating

war, would welcome it — but only as man had welcomed the substitution of the automobile for the chariot or the airplane for the locomotive, as something which made travel easier from starting point to destination. For man was bound to travel, to move forward, forever impelled by the desire for better things, material and otherwise.

The German, Italian, and Japanese peoples, patently unequally circumstanced in the resources of material prosperity, visibly confronted by a present which was economically precarious and a future fraught with disaster, would not accept their situation as definitive. For the moment, the effort to exploit fear of war as a means of coercion to persuade men to endure unjust and unequal circumstances might work, but it could not work indefinitely. The memory of past agony does not long survive the growth of a sense of present injustice.

Thus it is not an accident that the revolt against Geneva has been most violent in the countries whose economic resources are least considerable and whose material problems are most acute. Fascism, National Socialism, and Imperialism express the resolution of three great peoples in revolt against their economic conditions and destitute of every other resource save violence to amend them. To be sure, in Germany, Italy, and Japan the music is martial, the old ideology of nationalism persists; but the goals sought are material, the driving force is economic.

The League of Nations was dedicated to the proposition that peace had become the universal and unique concern of all peoples. But it was provided with no means to establish a condition in which this would be true, and in 1919 and the succeeding years it was not true. What could Geneva do, then? Pronounce war a crime and prepare legislation to outlaw it. But to make theft a crime by municipal ordi-

nance and still permit starvation does not stop stealing, but simply populates prisons. Honest men will steal to feed their children, and no law can be effective that honest men refuse to obey.

Thus honest men who are German, Italian, or Japanese reject the public international law of to-day because it is the legal foundation for the status quo. They are, in fact, training their children from the very cradle to break that law, to resort to violence to compel its revision, because the alternative is material misery and national decay. They have discovered in the post-war years that Geneva could be employed *against* their ambitions but never *for* them. The lands and resources of the earth had been divided up, and a no-trespassing sign guarded every parcel. If, however, the League of Nations was powerless to provide them with parity in opportunity with more fortunate peoples, it was also destitute of means to prevent them from trying to achieve it.

VI

To assert that the League of Nations is to-day dead is to say a silly thing. For, after all, machines do not live or die. At most they run or are idle, work or are discarded. A new machine invariably represents an attempt to provide a cheaper and more satisfactory product. In the same way the League of Nations was conceived as a substitute for war as a means to provide justice, to promote progress, to ensure both security and prosperity. It was designed to take the place of war, which was demonstrably a stupid, wasteful, terrible means for accomplishing these ends.

War, however, was not an inadequate means. Having no other instrument, mankind had seized upon it; by making war, nations had acquired liberty, prosperity, and unity. The long march had not come to a perma-

nent halt in November 1918. The generation which had known the World War, since it was shell-shocked, might perhaps be dominated by fear; it might be willing to accept any inequality rather than go back to the trenches. But nothing was ever more certain than that the generation which succeeded it would not permit fears born of a half-forgotten war to persuade it to surrender. If Geneva did not prove a substitute for war as a means to enable men and nations to better their conditions, then a new generation would return to the old instrument.

Geneva could only prove a substitute for war if the fortunate nations which had risen by war to their present circumstances were now prepared to share the profits of previous conquests with nations whom they were undertaking to persuade to refrain from further conquest. In fact, there never was any chance of success for the League when the most fortunate of all nations, the two English-speaking countries, declined to pool their resources with those of the rest of the world for the creation of a true partnership of peoples. The wisdom or folly of such a course does not need discussion here. What is pertinent is the effect of the British and American decisions.

To-day the League of Nations is reduced to the status of one of the many salients which used to dot the Western Front in the World War. Each of these constituted a grim memorial to an offensive once launched with high expectations of victory and eventually abandoned because the price of further progress was beyond the resources of the High Command to pay. Satisfied that Woodrow Wilson's prescription for peace will not work, the German and Italian peoples have turned to the older instrument pressed into their hands by Mussolini and Hitler, since they will not resign their resolution to rise to levels which the British and

American peoples have already attained.

VII

During recent years I have traveled about the United States a good deal speaking to audiences about international affairs. With few exceptions I find my hearers concerned with the question of how war is to be prevented. About the actual conditions of so-called peace they know nothing. Over ships, guns, and armies they are enormously concerned. To tell them that the Hawley-Smoot Tariff, the Japanese Exclusion Act, the American War Debt policy, may well prove to have been more potent in precipitating the next war than Italian Fascism, German National Socialism, or Japanese Imperialism is to leave them both incredulous and indignant, for they do not see the connection between American national policy and European and Asiatic material circumstances.

For them the alternative is narrowly limited to the choice between prosperous peace and destructive combat. They see war as a sin morally, a crime legally, a folly materially. They flame into indignation at the speeches of Hitler or Mussolini glorifying war; they are totally unaware of the disaster for world peace which was implicit in the message of the American President to the London Economic Conference. They close their eyes to the history of how the United States acquired the territories which are to-day the bases of its prosperity, but they roundly denounce the performance of Japan in repeating in Manchuria the performance of America in Mexico. They are completely blind to the naïve hypocrisy disclosed in the assertion that war has become mere barbarism, because their own past conflicts have proved so profitable that they no longer have appetites which only war could satisfy.

Above all, they are blind to the fact

that the supreme issue of the contemporary world is not political co-operation, but material; not military disarmament, but economic. They do not see that our contemporary civilization has become international in its economic and financial aspect, but remained national in its political forms. This is demonstrably the truth, and since it is the truth it follows that the political forms will be changed either by revolution or by evolution, either by wars or by collective reorganization.

Together, the American and French Revolutions released a new and dynamic spirit of political nationalism; peoples sought equality within national frontiers and unity within ethnic limits. Privileged classes were abolished and superior races restricted to their own ethnic frontiers. The World War was the latest and perhaps the last of the innumerable convulsions which had their origin in the example set by American farmers on Lexington Green and French volunteers at Valmy. And at the Paris Peace Conference the principle of self-determination was at last recognized.

But the Industrial Revolution in its turn released another spirit. For the consequent transition from an agricultural to an industrial era created a condition of privilege for those states which possessed upon their own territories an approximate monopoly of the essential raw materials of industry and within their national frontiers huge domestic markets. They were thus able to exercise an arbitrary power over the material existence of less fortunately placed peoples. For the latter could only obtain the raw materials necessary to their own industrial life as they were able to sell their goods in the market of the more fortunate. Denied that market, they had no alternative save between submission to inequality, with all its social consequences, and resort to violence to abolish the inequality.

That same choice, moreover, was squarely placed before the rising middle classes in England and France in the seventeenth and eighteenth centuries, and the results were the English Civil War and the French Revolution. It was always inevitable, too, that once the convulsion of the World War had begun to subside, peoples which found their economic circumstances unequal, and therefore inequitable, would seek to amend them. From the beginning of time the road to betterment had lain over the battlefield, and the League of Nations was foredoomed to failure if it undertook to close the only available road before it provided another.

British Imperial Preference, the Russian Five-Year Plan, the American New Deal (if it follows the course which found expression in the London Economic Conference), are bound in the end to make new wars inescapable, because each in its separate way is designed to permit a nation whose situation is well-nigh monopolistic in respect to the essentials of industry to exploit that monopoly in such fashion as to condemn less fortunate nations to the prospect of a declining standard of living and a rising tide of social unrest. And Fascism, National Socialism, and Japanese Imperialism are the more or less instinctive reactions of peoples caught between the poverty of their own national territories and the policies of the more fortunate nations.

In the larger sense the problem of peace and war in the contemporary world turns upon whether mankind can find a peaceful means of liquidating the consequences of the Industrial Revolution or must repeat the experiences of the past century and a half resulting from failure to find peaceful liquidation following the French Revolution.

The price of peace must, however, be paid by the substitution of some form of international control over the essential raw materials of the world

for the present system. Otherwise the continuation of the present unequal division, aggravated by the ever-growing monopolistic practices inspired by a spirit of economic nationalism, must lead to explosion. For the conditions of life will inevitably become progressively more intolerable for peoples situated like the Germans, the Italians, and the Japanese.

At the close of his latest book Bertrand Russell writes: 'The same causes that produced the war in 1914 are still operative and, unless checked by international control of investment and raw materials, will inevitably produce the same effect but upon a larger scale. It is not by pacifist sentiment but by world-wide economic organization that civilized man can be saved from collective suicide.'

From Lord Russell's conclusion I do not see how any student of contemporary conditions can dissent. Of course I am not naïve enough to believe that in the present temper of peoples, beginning with the American, any such control as Lord Russell suggests is even remotely imaginable. But that is why I see little promise of peace in the world. For on no other basis than equality in opportunity would it be possible to establish a partnership between peoples to prevent war.

It was natural enough for Woodrow Wilson to believe that if he could settle the question of nationality he could solve the problem of peace. It was, perhaps, inevitable that he and his associates at Paris should ignore the economic issues, just as their predecessors at Vienna were blind to the racial. But the result has been that the fifteen years which separate Woodrow Wilson from Adolf Hitler have barely enabled us to state the problem of peace, which in theory was solved at Paris. And, in the process, the League of Nations which was to preserve peace has been discarded because it could not create it.

MOONLIGHT

BY HENRY WILLIAMSON

THE other night, having some letters for London which must be collected by the van at 7 A.M. the following morning, I took cap and stick, meaning to walk to the roadside group of thatched cottages a mile away. It was a few minutes before midnight. I was tired, and the thought of the walk seemed wearisome. Equally wearisome appeared the idea of unlocking the garage and taking out the car. As I hesitated, the moon's horn showed by the top of a fir tree on the hillside opposite. Well, it was the same sort of thing one had seen for years and years. An owl cried somewhere among the dark trees. So they always had cried. One had heard them so many times that they made no more impression on the mind than the noise of an exhaust made on the mind of a London bus driver.

Well, the letters must be posted, and, after the hours of enforced sitting still at the desk, perhaps it would be best to walk. One did n't take enough exercise. Ah, if one could only feel about stars, moon, trees, grass, sea, as one felt about them years ago! Wordsworth, it was recalled, had felt an identical regret, almost remorse, for the passing of similar enthusiasms.

I walked down the garden path, across the lane, and into the deer park. The air was soft and still. I passed under the great lime trees, among whose leaves, in the past summer, hundreds of thousands of bees had murmured, in whose thickets around the

trunks wood pigeons and jackdaws had nested. How many years since one had climbed to a bird's nest? In a few moments I was on the bridge, looking down at the Bray water.

The moon was making the usual bright and broken lights on the three streams pouring from the three arches. Near the tail of the pool, where the water thinned and quickened, sudden tremulous strips of silver showed where a trout had risen. That was pleasing. Shadows of alders looked blacker than the trees themselves. The thought of that fact was wearisome, until I told myself it was not necessary to remember it for the purposes of writing it.

Surely, I said to myself, this is a beautiful and restful scene. It is interesting, too, for see! That glimmer, just under the fall of the middle arch, was surely the big trout turning over to take something — a 'mullhead,' perhaps, that had gone down with the stream.

Your trouble, or feeling of weariness, is only that you have got into the habit of using yourself as a receiving apparatus for natural impressions, for the purpose of rendering them into words, and thus obtaining money. You feel that you can never relax, become thoughtless in the sense of letting the inner nature rise up through the enslaved mind. There are nearly a dozen people entirely dependent on you, and unless you work all the time you will get into debt.

The camera of your mind is tired, abused by a demoniacal photographer. You have, in your need to rest, almost thought yourself into a nature hater. A man does not change, — Wordsworth was wrong, — but a man needs change. For a change, try and do what you really want to do.

So I sat on the bridge, and shut my eyes, and thought of nothing, breathing deeply and slowly, and as slowly respiring. The night was warm for October, and after a while I thought I would lie on the grass. What mattered if it were dew-damp? Rheumatism, so-called, came from ill feeding and drinking. I would lie on the grass. It was fine to lie on the grass, while the distant stable clock tolled midnight.

It seemed, as I rested there, that the stars had not been seen for years. The first frost would sharpen and make them glitter; but now they shone softly, as though very peacefully.

Closing my eyes again, I let the sounds of the river flow through me until I began to feel again a serenity of earth which no conscious thought could give. How often did the activities of the brain force one away from one's true or inner or natural self! Damn the brain — a good servant, but a bad master.

I lay there until the clock tolled one, then I arose and walked happily,

thoughtlessly, to the main road and the post box. Clearly the moon revealed the hour of collection, and I had brought an electric torch to make sure! Years ago the sight of anyone taking a torch for a night walk would have filled me with scornful protest. No sight — no insight.

And why go home? I was actually enjoying the walk. The windows of the cottages were all blank. The nose of the painted grotesque wooden stag's head on one of the walls gleamed where a hibernating snail had crawled. Everything was so still and quiet. My body was non-apparent. The moonlight was in me and through me. I marveled at the cottage folk who, with one exception, had shut out this lovely air from their bedrooms. I would walk up to the moor and sleep in the heather if I wanted to, or walk on if I wanted to.

Certainly I would. I went home to get my coat. Having got it, I hesitated. To-morrow those book reviews must go off, and if one were tired — my breast seemed filled with the loveliness of the night, and this was the time to sleep. So I pulled my bed to the window and lay there happy, while the moon climbed far over the fir trees, until serrated by the silver fringe of thatch, and I fell away from myself in sleep.

OBIT FOR E. HARRIS

BY GERTRUDE SCOTT

I

MR. GOTTFRIED FREY's daily arrival at the bank one half hour before the other Vice Presidents was the symbol of his hostility toward that piece of damn foolishness, opening for business at ten o'clock. If these fellows would stop gallivanting at night and get to their beds, they could start up the bank at a decent hour. Back in the eighties when he'd started out, nobody'd ever have thought of making a customer wait till almost lunch time to draw out his own money.

With a rolling movement, as though on wheels, a gait suited to his short egg-shaped figure, he proceeded to his desk, sat, caressed his nose, which was spotted with blackheads, sniffed, and turned his *Tribune* to the obituaries. It was on this page that he was accustomed to look for news of his friends. They were going fast, and tidy estates they were leaving, too, for these fellows to pluck clean. In his day a man's brother was good enough to execute his will, but now they had to have co-executors and co-trustees and contingents and all kinds of damn nonsense.

For the past week, now, he had been resigned to its being just a matter of days before he'd find Ed's name among the death notices. That young fellow Dunlop, Ed's snippety grandson, had told him the day before the Fourth that there was no hope.

'Is he conscious? Does he say any-

thing?' It hardly seemed the thing to ask right out if Ed was mentioning him.

'He's rational part of the time,' said Dunlop, 'and he recognizes us. But all he seems interested in is whether some of his slow accounts have paid up. He's always asking about collections.'

And why not? The bewilderment in Dunlop's tone had upset Mr. Frey. What else but the business would his granddad be thinking of as he lay dying? Ed had given his whole life to E. Harris & Co. He'd built it up to be one of the best butter houses in New York. Why, in good times they'd sell at least two carloads in a morning!

Well, he was gone. 'Harris, Edward. In his sixty-seventh year. Interment private.' And in the middle of the page, a nice half column, 'Butter Merchant Dies; Headed Commission House.'

Ed's name right there in the death list stunned Mr. Frey for a minute. He'd been expecting it, of course — but, to begin with the age: if Ed was sixty-seven, so was he — and more.

And to think of Ed a corpse. Through.

He thought of how, in late years, he and Ed had eaten every day at the Rathskeller on Duane Street. And how Ed would rant if he thought the coffee had been boiled. He and Ed had always been chummy, but in the last few

years, and particularly since Sam Best had been retired from the bank, they'd been very close.

Ed had started out in the Washington Market about the year '81 standing behind a stall, selling butter, eggs, and cheese. The market was celebrating its one hundred and twenty-fifth anniversary this year. Gosh, Ed must have hated to miss that! Although he would hardly have approved of some of the doings — for example, having those CWA men paint pictures of the market and the oldest stall-keepers. A fine way to waste the taxpayers' money!

Ed had been a success. In '88 he'd dropped the stall and gone into butter, wholesale and commission. If you looked sharp — and Ed had — there was money in butter. Look at it this year — though maybe that was the drought. Ed would put butter away in storage in June; then just at the right time — say December — he'd take it out and sell it. Some years he'd make 100 per cent on his money. He'd never failed to make something. If you knew the butter market, it was a cinch compared to stocks, although sometimes Ed had had to keep his butter a couple of years to get his price.

Ed had been a sport, too. When those coöperatives sent their men East, then what spicy stories he had had to tell. And he'd liked a pretty leg; but no further — he was loyal to the Missus.

And how he'd fuss about his rates on loans. He'd always expect his money for a quarter under the market. But that was the way he'd made money. You had to be a quarter sharper at least than the other fellow. At any rate, that was the way they'd made money when it was being made; nowadays there was too damn much system to get anywhere in business.

Take this bank. Everybody grabbing titles; it was worse than a lodge. This fellow Taylor, walking in here at

quarter past nine. He was Office Head, New York City Offices Head, Vice President, Chairman of this, Vice Chairman of that. Forty, fifty years ago a bank was run for the customers, not the officers. The President in those days was n't hid away from everybody in a kind of throne room like he was God, nor was he making a hundred thousand a year. No! The President used to sit right out in the open with nothing but a brass rail between him and the clerks. They'd all used the same cuspidor. And the Cashier used to help them balance.

In those days everybody did an honest day's work, and there was none of this system to keep them back, either. If a man wanted to borrow money he walked in and asked for it, and if his character was good he got it. Now anybody wanting a little credit had to bring in a certified audit big as the Bible with all kinds of fancy breakdowns of inventory and receivables. Next thing these fellows would be wanting to know if the petty cash was in quarters or halves. No wonder they needed thirty-five Vice Presidents and forty Assistant Secretaries.

He and Ed had hashed all that out many a time. That Dunlop, who could n't tell Wisconsin butter from oleo, had a lot of uppity notions he'd got at Harvard Business School.

II

Well, Ed was gone. He would miss him, would miss him. And now he must write to Dunlop. He wanted to make it a good letter, a kind of personal letter, not like these damned samples in that new-fangled *Manual of Correspondence*.

'Where's my pen?' he asked his secretary, peevishly.

'I'm putting in a fresh point, Mr. Frey,' she answered, gently.

He detested his secretary. She was

a Vassar girl. Would n't even let him answer his own telephone. 'Mr. Frey's desk. Who is calling Mr. Frey? Mr. Frey is ready; will you please put him on?' If there was anything that made his stomach turn, it was to tell some prying girl all his business. By golly, when his friends called they wanted to talk to him and not her. Miss Camoys. He sniffed. He could n't go to the men's washroom without telling her — one of Taylor's ideas. And she changed his letters till they were n't a word he'd dictated, and pestered him to death making memos on his calendar, giving him circulars on bookkeeping procedure to read, and even keeping a diary of everybody who called. . . .

'Good morning, Mr. Frey.'

He looked up. It was Taylor.

'Morning, Taylor.'

'I see old Mr. Harris died last night.'

'Yes.'

'Is Dunlop going to run the business?'

'I don't know.'

'Is he pretty friendly to the bank? Do you think we can keep the account with the old man gone?'

'No telling what *he'll* do.'

'Dunlop roomed at college with young Dennison, whose father is a pretty big officer over at the Second. We'd better do some intensive cultivating. Are you going to write a letter?'

'Yes,' said Mr. Frey. 'I'm writing.'

'Well, make it brief and very cordial, will you? And I would n't say anything about Mr. Harris starting out in the market. I think Dunlop's a little sensitive about that.'

But not too sensitive to spend Ed's money, Mr. Frey thought, stroking his nose. And as for that fellow Taylor! Ed not cold yet, and already worrying about keeping the account. He held his pen up to the light and examined it carefully. Damned if he liked a new

point — it never held the ink. He dipped the point in the well, wiped it with a cheesecloth duster, redipped it, and began his letter. He wrote on scratch paper, slowly, with some cross-ing out.

DEAR DUNLOP:—

It is not easy for me to find words to adequately express my sorrow on the occasion of the death of your grandfather, Edward Harris. My loss personally might be called small in comparison to what his passing will mean to the trade and those he worked with all his life. For though in his time he scaled great heights, he was never too proud or too busy to give of himself and his time to those who came to him for help out of his great volume of experience.

He stopped and read what he had written. He read it again. It satisfied him. Ed would have liked it.

From when I first knew him —

Miss Camoys spoke softly. 'Here's Mr. Best, Mr. Frey.'

In his surprise he looked up delightedly. 'Well, sir, how do you do, Sam. How are you, my boy?' Then his voice quavered as he remembered and asked, 'Have you heard about Ed?'

'Yes, Gottfried, that's what brought me in this morning. Was it sudden?'

'He had a stroke in April,' said Mr. Frey.

'Soon we'll all be gone,' said Mr. Best mournfully. 'Remember when we started out?'

'Yes, Sam, I do,' said Mr. Frey. 'I remember when I came to the bank I got your job as runner, and you got promoted to the switchboard.'

'A raise, too,' said Mr. Best, smiling indulgently. 'To thirty dollars a month.' He offered Mr. Frey a cigar.

Mr. Frey looked at the clock and shook his head.

'No smoking between ten and three,' he whispered, with a significant look.

'Except with customers. One of *that* fellow's ideas.'

Mr. Best tried to show his sympathy by attempting a whistle.

Mr. Frey hitched his chair closer to his friend. 'Say, Sam, what did they give you when you retired?'

Mr. Best looked surprised. 'You're not expecting —'

Then, as Miss Camoys came over to the desk, he stopped and wobbled his cane with embarrassment.

'I'm not on the new organization chart, though nothing's been said yet.'

'I got \$18,000 cash when I left. Soak 'em, Gottfried.'

'Leave it to me,' said Mr. Frey. 'After a man's given his whole life to an organization.'

'These young fellows have no heart,' said Mr. Best. 'Say, Gottfried, what do you do with your money these days?'

'What can you do?' asked Mr. Frey. 'Even the savings banks won't take it. I got \$50,000 in my checking account right now I don't know what to do with.'

'My son-in-law's bought pepper,' said Mr. Best. 'It keeps years, you know.'

'If the Administration would just step back and give things a chance, everything would be all right. Stirring up labor, throwing away good food. Well, the NRA's fizzling.'

Mr. Best nodded and got up slowly. 'Well, Gottfried, I thought I must come down and see you when I heard about Ed. I know we'll both feel it. A great fellow. You going to the funeral?'

'I'd like to,' said Mr. Frey, 'but the burial's private, and Elizabeth's a long trip just for the services.'

'We could drive over,' said Mr. Best, somewhat wistfully. 'I've nothing else to do. Ben Fletcher had a wonderful funeral. I could n't tell you who all was there.'

'I'll call you,' said Mr. Frey. 'I'm writing to Ed's grandson now.'

He watched Mr. Best, tall, with stooped bony shoulders, wearing a white linen suit, walk stiffly through the lobby, and then picked up his pen and wrote rapidly, without any hesitation.

From when I first knew him I felt honored to be his friend, but in later years, as he and I have together seen so many of our fellow business men fall from the ranks of activity, his friendship came to be more precious to me than ever.

I can never forget the first time I saw him. He came into the old Produce Bank to borrow the money that he started the business of E. Harris & Co. with. He wore a white apron. It was spotted and greasy. I think that utter lack of pretense which was so dominant in his make-up was one of his finest qualities. Certainly I have never known a sturdier, truer character. His honesty and integrity have been a byword among his fellow produce men.

Only those who have had a friend like him will know the vacancy that exists when he is called Home.

Without reading it over, for he knew that it was good, he handed the letter to Miss Camoys.

'Type this,' he said, 'and put it on the good stationery.'

She answered, 'Yes, sir,' and took the letter.

III

Mr. Frey rubbed his nose idly and then went to the window and looked out. A truck load of cows was riding to slaughter. Across the street an old brownstone office building was being demolished. An ambulance shrieked for right of way. He peered to see the sun, but it was hidden by high offices. It was hot and the air was damp. He thought of Ed.

'Here's your letter,' Miss Camoys said softly.

She handed it to him. He read it

standing by the window. It was beautifully typed, on a heavy vellum-like paper with Gottfried Frey, Vice President, engraved in small roman to the left of the name of the bank.

DEAR DUNLOP: —

I am very sorry about your grandfather. His friendship has always meant a great deal to me, and I know how his advice and counsel will be missed among the trade.

His long relationship with our institution, dating from the days of the old Produce Bank, is something of which my associates and I are extremely proud. We hope that we may continue to serve you as we have always tried to serve him.

My fellow officers join with me in expressing to you and to your family our warmest sympathy.

Yours very sincerely,

Vice President

Mr. Frey read the letter. Then he read it again. That girl — that girl!

He pushed it away roughly. That

was not the letter he had written. She had changed it. She had had no right to make it different. He would speak to her. He would tell her so. Ed Harris had been his friend — not hers. She must write the letter the way he wanted it. He would tell her so.

Well, what good would that do? She would go to Taylor.

Yes, but he'd go to Taylor first. He'd tell him how she changed the letter. He would show him the two letters, hers and his. Not an identical word. He would tell Taylor.

And what good would *that* do?

A little taffy from Taylor, perhaps, but after all, who'd put her there beside him? Taylor.

He leaned back in his chair and rocked a little on the spring. It squeaked. He felt very lonely.

Then he sat up, reached across the desk, and drew the letter toward him. Over the 'Vice President' he signed his name.

WHO GETS RELIEF?

BY DOUGLAS McCLURE ANDERSON

FOR the past fifteen months I have been acting as a humble unit in the vast emergency set-up of relief machinery created by the depression. My job is that of investigator with our local county relief board, which serves a large metropolitan area. I am not a trained social worker, nor do I subscribe to most of what currently passes for socialist doctrine. My point of view is necessarily that of an observer — an observer who has had the good fortune to be taken into the confidence of some of the unfortunates who represent the relief problem in our country.

At the present writing my own district numbers 187 families. Most of these have been receiving relief since I came with the organization in July 1933; many have been on the rolls since the early fall of 1932, when the present relief system was inaugurated; and a few have social-service histories with public and private welfare agencies antedating the panic. Finally, there are the most recent arrivals, those, let us say, who were accepted as relief cases during the past summer.

My work, then, has to do with four general groups, each determined by its chronological position in the history of the depression. Needless to say, the boundaries of each group are arbitrary, being set up merely for the purpose of clarity and convenience in handling the whole. The only importance of visualizing them as groups at all is in order to try to answer some

of the questions which naturally arise out of two years of federal unemployment aid.

I

We begin with Group I — those people whose troubles started a little before ours did in 1929. Most of the cases in Group I are referred to as 'chronics' by the social-service worker — that is to say, they are people who have either drifted or fallen into the class of permanent dependents. For the most part they spend their lives standing in lines — at the free clinics, at the free clothing centres, at the agencies where it is rumored that rent money may be had, at the local Veterans' Administration bureaus, occasionally at the free employment agencies. In many ways they go to make up the most interesting social stratum of the lot, although not the most pleasant, perhaps. From my own district I can present a statistical picture of Group I. These figures are based on actual data — reports from clinics, summaries from institutional psychiatrists and from asylums, and answers to special inquiries sent to former employers.

TOTAL ADULT PERSONS, GROUP I: 76 *Reasons for Permanent Dependence*

Old age	27
Insane	2
Syphilitics	3
Narcotic addicts	1
Alcoholics	13
Obsolete trade	2
Physically incapacitated	12
Undetermined	16

One can readily see from these figures that Group I constitutes a special problem in social rehabilitation — that it exists as an isolated unit, apart from the need for a temporary programme of unemployment relief. It is not like the other three groups, a normal social unit in an abnormal economic period. The class of permanent dependents has nothing to do with the economy of the depression, with the absorption into private industry of those now existing under conditions of enforced idleness. The aged, the insane, the socially maladjusted, and the physically incapacitated do not confront us with an emergency unemployment problem so much as with the need for a specialized social programme — a programme first of segregation, and then of rehabilitation.

I have found this to be true time and again of cases that are being treated in my own district as products of the strike, the lay-off, and the bear market. In one of my Group I families the son has been made the victim of an unnatural vice which has been allowed to develop unchecked over the past five years. The boy is now eighteen, with a long history of moral delinquency, documented by juvenile court records and S. P. C. C. and other welfare agency summaries. Aside from suffering from definite social maladjustment, the boy is utterly unequipped to take his place in society as a self-supporting individual. The mother is living, but during the whole process of demoralization has remained a non-resistant factor in the family unit, partly by reason of fear and partly out of moral apathy. There have been repeated attempts — earnest and intelligent — on the part of the social agencies mentioned to cope with the situation and to force it to a solution. But each time it has been abandoned to parole or probation by the juvenile court the old features of the case have

reasserted themselves. On and off, this family has been receiving public aid since 1927. To-day it is active with our organization, and we are the only ones left to participate in the problem, hardly one of unemployment relief.

The old-age dependence cases are the most pathetic, and the most numerous, in Group I. Mr. and Mrs. C., aged seventy-one and sixty-eight, live in a furnished hall room for which they have been able to pay nothing in over two years. Thanks to the indulgence of their landlady, they still have a roof over their heads. They are such a delightful old couple that when I go to see them I am continually forgetting that they are relief clients. Mr. C., up to 1927, was doing a \$15,000 a year business in yellow pine timber for the construction trade, and had been enjoying moderate business success since 1900. When, in the 1920's, yellow pine began to be replaced largely by structural concrete and fabricated steel as a building staple, Mr. C.'s business was among the first to suffer. By dumping his profits, and finally his life savings, back into the business he was able to keep it solvent and his men at work, while he tried to recapitalize in order to enter some more profitable market. Because of the scale of his business the process was slow, and dubious. His plans were never completed. In 1928 Mr. and Mrs. C. 'temporarily' accepted relief from the local Department of Public Welfare. With the collapse of the 1929 market and the subsequent paralysis of credit, their sun had definitely set.

Their serenity in the face of all that has happened is miraculous. Mr. C. thinks that if it were n't for his high blood pressure he might be able to do clerical work, if there were clerical work to be found. Mrs. C. is an expert dressmaker, but of course with the

sweatshops . . . To-day our organization is giving them the same assistance that it deals out to strikers, mill workers suffering a seasonal lay-off, and youngsters seeking enlistment in the CCC.

II

We pass from Group I to Group II, where our problem loses its social emphasis and becomes more purely economic. This is the group whose relief history dates from the inception of the FERA in September 1932.

If one were to plot the social curve of Group II, he would find it beginning among the illiterate foreign-born and Negro laboring population and climbing up steadily through the trades to lose itself in the lower reaches of the upper middle classes. It would require more time than is at my disposal to prepare factual statistics on so sizable a body of cases, but in order to acquaint readers with the general character of this group I have attempted the following tabulation.

APPROXIMATE NUMBER OF EMPLOYABLE
ADULTS, GROUP II: 150

Ordinary laborers	35%
Skilled laborers	30%
White-collar workers	12%
Floating clientele (strikers, seasonal lay-offs)	20%
Professional	3%

As is reflected in the above table, the solid majority of Group II families have been reduced to public dependence by the wholesale industrial collapse affecting such general industries as building and construction and the allied trades, railroads and manufacturing. They constitute what I should call the 'relief norm,' for want of a better term — those in whose particular interest relief legislation was made the *sine qua non* of New Deal planning.

Departing from this norm are the 35 per cent whose presence on relief rolls

raises separate questions — specifically, the 12 per cent white-collar workers, the 20 per cent floating clientele (strikers and seasonal lay-offs), and the 3 per cent from the professions. Shelving for the moment the white-collar and professional groups, I should like to direct your attention to one of the most delicate situations with which the Federal Emergency Relief Administration has been faced in the two years of its history.

Had the administration, let us say of Mr. Coolidge, been confronted with the question as to whether or not the ultimata of labor organizations should be underwritten by the government, we can well imagine what the answer would have been. In our day the 'federally financed strike' has become a thinly disguised commonplace.

When a local of the A. F. of L. in our city recently ordered a walkout of all cab drivers pending arbitration with the holding company over pay rates and union privileges, it was the Federal Government, and not the union, that footed the bill. Through the agency of federal unemployment relief, idle strikers' families were provided with grocery orders, coal, clothing, shoes, and milk for the children, during the period of arbitration. The question that was immediately raised is one which even to-day has not been settled — the question as to how far the government can allow itself to go in the matter of financing collective bargaining out of public relief funds.

The relief-underwritten strike has placed embattled capital in a position the paradoxical nature of which runs almost to comic opera. By virtue of already being a heavy contributor, through taxation, to the FERA, big business now finds itself unwittingly helping to subsidize the very strikes which loom as its major problem. Even

more than a case of robbing Peter to pay Paul, the federally financed strike threatens to place relief as a weapon in the hand of the labor agitator and the union boss. So far the impasse has been dealt with as an emergency problem. How much longer it can continue to be treated as such remains to be seen.

I quote from recent instructions on the matter:—

The Federal Emergency Relief Administration is concerned with administering relief to the needy unemployed and their families. Each case applying for relief to the local emergency relief agencies should be treated on its merits as a relief case wholly apart from any controversy in which the wage earner may be involved.

The Federal Emergency Relief Administration will not attempt to judge the merits of labor disputes. State and federal agencies as well as courts exist which are duly qualified to act as arbiters and adjusters in such disputes.

Unless it be determined by the Department of Labor that the basis for the strike is unreasonable and unjustified, the Federal Emergency Relief Administration authorizes local relief agencies to furnish relief to the families of striking wage earners after careful investigation has shown that their resources are not sufficient to meet emergency needs.

To return to the remainder of Group II, we find another interesting phase of the question, 'Whither relief?' in that class composed of the professional and white-collar workers. The conception of relief as an economic stop-gap, providing the individual with barely enough food and clothing to tide him over until he regains employment, presupposes that he will regain employment sooner or later. Applied to the professional and white-collar relief client, such a conception often fails adequately to cover the needs of the case. As he is a more complex individual than the day laborer, so the brain worker's problems are more com-

plex. The questions of retaining health and morale, of maintaining his special capabilities so that they may be ready for instant use should the opportunity arise—these are only a few of the many factors governing his situation and peculiar to it.

Immediately there arises the question of budgetary discrimination in computing the individual relief grant. So far no cognizance has been taken of this question, eligibility for assistance and the extent of such assistance being based on two factors—first, the family's size and the ages of its members; second, its income or resources. Under this system the family of an unemployed chauffeur or hod carrier receives the same basic relief grant as the family of an unemployed physician or lawyer.

Since the purpose of relief is not to furnish a substitute for employment, but only to provide a temporary remedy for the effects of unemployment, and since admittedly the system fails where it multiplies rather than reduces the conditions which stand in the way of a speedy return to economic independence, the basic or collective system of determining relief eligibility and relief apportionment often defeats its own purpose. Where client A, an unemployed house painter, may still hope for a gradual return to his trade in an open competitive field, client B, an unoccupied physician, is obliged to consider his future in terms of the A. M. A., the County Medical Association, and that definite standard of professional ethics which both represent. To bracket client A and client B under a communal relief standard may solve the immediate biological problem of existence, but it leaves the ultimate question of social and economic readjustment unanswered.

There is still remaining to us out of Group II the 65 per cent majority whom we thought of as constituting

a sort of 'relief norm.' This is that great inert shoal of humanity which, having neither battered on the boom nor yet quite starved to death under the slump, has kept on having its babies, its evictions, and its funerals in a sort of cosmic defiance of economic graphs and alphabetical bureaucracies. True, the 'employment turnover' here is negligible, but this fact is almost offset by the stubborn will of the group as a whole to survive, and in some instances to survive comfortably enough in the face of odds.

Mr. R. is an unemployed colored truck driver who lives with his family in a verminous frame hutch on which no rent has been paid since we accepted the situation for relief on September 15, 1932. Altogether there are nine in the family, seven of whom are children ranging in years from three to fifteen.

Even at the crest of the boom, Mr. R. never earned more than \$18.50 a week driving a coal truck. Out of this he managed somehow to clothe, feed, and insure his family, and to make fairly regular payments of \$22.50 a month to his landlord. To-day we are supplying him with a grocery order of \$9.05 a week plus four quarts of milk a day; paying his monthly gas bills; outfitting each member of the family, every six months, with three complete sets of new clothing, and one pair of new shoes or a requisition to have the old ones repaired; authorizing *carte blanche* medical and dental service (not merely clinical attention) at nominal periods; and, during the heating season, chuting one ton of nut coal into his cellar bins every five and a half weeks.

My enumeration of what is being done for Mr. R. may lead you to suppose that I begrudge it. On the contrary, Mr. R. and I are friends, and we have talked the whole thing over. He has allowed himself to become com-

fortably phlegmatic about the possibility of his ever returning to work for \$18.50 a week.

I have tried to goad him with the prospect of his unpaid rent and his lapsed insurance. He only grins. Does n't his landlord know he's 'on the welfare'? As for the insurance, well, he guesses he could have got by without that anyhow — it was only something else to 'belong to,' like his lodge or his political ward. He is quite ready to agree that his general standard of living has been bettered by the depression, and looks back to the 'good old days' with no regret. He is only the ghost of the Mr. R. who lost track of himself somewhere in the mazes of a system whose one extreme had tried to enslave him and whose other extreme has fairly well succeeded in pauperizing him.

It is important to remember, Mr. R. notwithstanding, that subsidized idleness is a distinctly minor phase of the relief norm. The great burden of clients still accept the grocery order as a necessary hardship and continue to haunt the employment offices and the city streets in the desperate search for a way out and a return to an honest living.

If it is true that our organization stands convicted of supporting Mr. R. in his verminous complacency, it is likewise true that the same organization assures the worthy ninety-nine of their bread in a world which might otherwise have nothing to offer but stones.

III

A question frequently asked of new relief applicants is, 'Why have you waited until now to apply for help — how have you managed to get along so far without it?'

The question furnishes a particularly effective vantage point from which to view our last two relief divisions —

Group III, numbering those on relief since July 1933, and Group IV, numbering those who made application during the past summer. Here the statistical picture is more varied, from an economic point of view, than were those of the first two groups.

TOTAL NUMBER OF FAMILIES, GROUP III: 102

Reasons for Deferred Application

Personal resources	10%
Other resources	
(Aid given by relatives, friends, or private organizations)	30%
Part-time employment	20%
Public agencies now defunct or operating on reduced budgets	10%
Old age, physical incapacity, and miscellaneous reasons	10%
Undetermined	20%

TOTAL NUMBER OF FAMILIES, GROUP IV: 38

Reasons for Deferred Application

Personal resources	5%
Other resources	
(Aid given by relatives, friends, or private organizations)	40%
Part-time employment	5%
Public agencies now defunct or operating on reduced budgets	0%
Old age, physical incapacity, and miscellaneous reasons	10%
As a means to establishing eligibility for LWD employment	40%

In the light of our data on Group III, it appears that the larger number of families were kept off the relief rolls until July 1933 by aid in the form of food and shelter afforded by relatives or friends, or by the philanthropic activities of churches, lodges, and other private organizations. The failure of one or the other of these subsistence resources made the family directly dependent on the federal unemployment relief programme for existence.

In most cases the problem was found to be one of housing, aggravated by the pressure of temperamental differences among the members of the families due to crowding and other factors. In some instances the original family unit had suffered so many multiplications that it had almost lost its group

homogeneity. As an example of this, the M. family, several years prior to its registration with us, existed as a simple family unit in which there were Mr. and Mrs. M. and six children — four of whom were of marriageable age, two sons and two daughters. Two months before Mr. M., a machinist, was retired on pension, one of the sons, who was employed, was married, and brought his mother-in-law and an unemployed brother-in-law into the M. house to live. The son's wife had two children, making a total addition of five members to the household. Mr. M.'s income from his pension being no longer sufficient to meet the family budget, the son was obliged to carry the burden of the living expenses. In the same year both of the daughters were married, but neither of their husbands was employed. The situation grew from bad to worse and finally culminated in the married son's moving out to a separate address, taking with him his younger unmarried brother and the remaining two unmarried sisters. Although he continued to help from time to time as he was able with the father's household expenses, the M.'s were ultimately served with a constable's levy ordering them to vacate the house for rental arrears. It was at this crisis in their affairs that they applied for relief.

In arriving at our decision we were obliged to consider the family as two units, excluding Mr. and Mrs. M. from the grant in consideration of Mr. M.'s pension income. Thus there were left, as the remaining unit, the families of the two married daughters, one of which we identified as the 'primary' family, and the other as the 'living-with' or secondary family. Mr. and Mrs. M. were considered as contributing free shelter, and relief was granted on a simple, no-income basis.

Often the complications are such that it is impossible to establish a relief-

eligibility basis until a complete re-orientation of the various groups within the household has taken place. Usually the prospective clients become aware of the conditions surrounding eligibility, and, upon rejection of their case, one or more of the groups separate themselves and apply individually. Many of our rejected complex-family cases have managed to resolve themselves, in this manner, into simple-family units and establish their eligibility for assistance on separate grounds.

IV

Applying our current question to Group IV, — those who were accepted for relief during the past summer, — we arrive at a wholly new and different problem, one that has developed, as it were, by the way. This concerns the most recent phase of relief administration, which came into being with the creation of the Civil Works programme on November 7, 1933, more properly known as 'work-relief.' As its name implies, work-relief proposes to replace relief-in-kind by a system of subsidized public works, designed to enable the client to 'earn' his relief allotment instead of merely receiving it as a dependent. Almost everyone is acquainted with the programme as it has been carried out during the past year under the familiar initials LWD.

The necessity for transferring families from a simple relief-in-kind status to one of work-relief added amazing complexities to the clerical phase of our work, and often caused unavoidable hardship to the families themselves. Because of budgetary limitations and the attendant uncertainty of the duration of individual projects, the whole programme has from the beginning moved forward under a pall of confusion and ambiguity. As a further consequence of the limited budget it was found in numerous instances that the change in

status could not be effected by a single operation, the size of some families requiring their being carried as both relief-in-kind and work-relief cases. For instance, a man earning only \$15 a week, with a family of eleven to support, was still eligible for a small supplementary grocery order, and was being continued in the files of the relief organization as its client while being listed on the payroll of the Local Works Division as an employee.

But these surface snarls were perhaps to be expected, and as the programme goes into its second phase many of them have been recognized and eliminated. Unfortunately, the real and inherent weakness of the LWD programme has remained. This is concerned directly with the basis of eligibility for LWD work. As anyone knows who has applied for such work, a person must first establish his identity as an active relief client before his name is even given consideration. In principle it has had the effect of putting a premium on unemployment. Turning back to our statistical tabulation of Group IV, we note a direct ratio between the percentage of families who gave private aid as their reason for delaying relief application and the percentage of families who admitted that they sought relief at that particular time as a means to establishing their eligibility for LWD employment. The figures tell us, in substance, that 40 per cent of the families in this group might have been independent of relief, either in kind or in work, but were practically invited to prove themselves paupers as a condition to their being accepted by LWD.

As a fair example of how this operates, I was obliged recently to reject a young married couple for relief on the grounds that the woman's mother and father, with whom they were living, had an income sufficient to include their support. The man had been unem-

played for more than two years, and the situation had become almost unbearable to all concerned. I was particularly impressed at the time by the mother-in-law's domineering interest in the whole interview, and found that I was not wrong in supposing that she had initiated the relief move solely for the purpose of assuring her son-in-law of LWD eligibility. When I had explained the reasons for our inability to authorize relief, she demanded to know what would be our attitude if she were to put them out on the street. Since the facts were in her favor, I was obliged to admit that probably they would then be eligible. I had quite forgotten the case when several days later a fellow worker came to me with it. The couple had been given enough money by the mother-in-law for the specific purpose of establishing themselves at a new address, and had promptly reapplied. They were ac-

cepted as being without sufficient resources.

So far the general effect of the relief-eligibility basis has been to decentralize the LWD as a separate federal recovery agency and at the same time to distort and obscure the essential principles and aims of unemployment relief.

As is the case with most human enterprises whose motive power is idealism, the salvation of work-relief lies not with those who were its authors, nor with those who happen to be its administrators, but with the great living and breathing bulk of the thing itself — with the LWD workers who compose it and for whom it was brought into being. On them it stands or falls, and the degree to which they use it as an agency to human betterment must determine whether it will grow to something of really American proportions or fall away to a cheapjack political racket.

TESTAMENT

THERE are too many poems with the word
Death, death, death, tolling among the rhyme.
Let us remember death, a soaring bird
Whose wing will shadow all of us in time.

Let us remember death, an accident
Of darkness fallen far away and near;
But, being mortal, be most eloquent
Of daylight and the moment now and here.

Not to the name of death over and over,
But the prouder name of life, is poetry sworn.
The living man has words that rediscover
Even the dust from whence the man is born,

And words that may be water, food, and fire,
Of love and pity and perfection wrought,
Or swords or roses, as we may require,
Or sudden towers for the climbing thought.

Out of the beating heart the words that beat
Sing of the fountain that is never spent.
Let us remember life, the salt, the sweet,
And make of that our tireless testament.

JOHN A. HOLMES

FINALE IN MOSCOW

Youth and Revolution

BY VINCENT SHEEAN

I

BETWEEN July 5, when the Revolutionary government in Hankow fell and I said good-bye to Rayna Prohme, and September 18, when I went up the steps of the Metropole Hotel in Moscow, a profound change had taken place in the texture and organization of my mind with respect to all the subjects brought together in these articles.

To put such complicated processes into words is difficult to the point of impossibility: the words are gross with implications, refusing, as often as not, to bear their own exact meanings; it is too late in the history of a heterogeneous language to strip any word quite clean. But, as nearly as I can define it, the change had consisted in a steady, orderly concentration of thought and feeling within this cycle of experience — to which I have given the name 'revolution' — and, concurrently but less precisely, within the subsidiary or preparatory cycles outside it, upon a single phenomenon containing the principles of energy diffused (but neither organized nor put to work) throughout the system. The central phenomenon — the sun of this solar system — was Rayna Prohme. During the weeks after the fall of Hankow, when her fate as a human creature (as Human Being Number Eight Trillion or so) was seriously disturbing my molecular activity

as another member of the same series, her essential principle was taking its natural place at the centre of my world of ideas; the first process was minute, demands the microscope, and has no important place in a narrative that is not concerned with strictly private matters; but the second process, for which the telescope is the appropriate instrument, involved every fragment of material within my experience of life or view of the world.

When I turned from the hall porter's desk at the Metropole and saw her coming toward me the process was already completed, but it needed that moment of blinding significance to become irrevocable.

I have never known a moment like it. For six weeks I had imagined her dead, torn into pieces by a mob, broken and sunk in the mud of the Yangtze-kiang or buried obscurely, after days of torture, in some dreary and forgotten Chinese field. These morbid fancies had alternated with others in which I imagined meeting her again, but it had never been wholly credible to me that I might find her, alive and well, by the mere effort of going to Moscow. And yet here she was, coming swiftly across the hall, laughing, hands stretched out, her eyes alight beneath the conflagration of her hair. A stab of joy, a flood of relief, and a tempest of excitement,

all took less time than it takes to write the two syllables of her name — Rayna.

II

This being so, I must face the problem of stating, as clearly as possible, the nature of our relationship then and afterward. It was not a sexual relationship — at least not as the phrase is currently understood. Neither in words nor in gestures did it take the forms of intimacy known to the readers of a thousand erotic novels. I shall not attempt to explain the mystery of an all-pervading, all-controlling emotion that had no physical basis, but it existed. If these words fall under the eyes of a reader who cannot believe such a thing possible, he had better stop reading at once, for it will be assumed from here onward that the fact is plain.

And from that moment of reunion onward it was impossible to seek the relationships that seemed necessary to life (a relation of one to many, a place in the chain of cause and effect) without reference to this solar phenomenon, this sun perceived, lost, and found again, a focus of reality for which the only solid expression was a slip of a girl with red hair. The issues that converged for me upon her fiery head were the most serious any human being has to face, and they converged there, most of all, because she had faced them first. When I said, in the account of our meeting in Hankow, that we were inescapably magnetized toward the same pole of reality, I was describing a state of things that had now ceased to exist; for now, as we met in the hall of the Metropole, she had already moved so far toward that pole as to become part of its immediate radiation. The problems of minor movement no longer counted for her; they had been solved; she had reached her centre. If we define this central reality as the meaning (or

conviction of meaning) in the existence of an individual, his sense of exact position with respect to the multitudinous life of his species in its physical environment, it may be seen that, for persons like ourselves, it had to be the whole thing, the sum of good. I say 'for persons like ourselves,' because there existed other kinds of persons unmagnetized to any central reality — willing to expend their allotment of time without attempting to relate it to the time of which it was a segment — and still other kinds contented in this necessity by the easy promises of supernatural religion and the immortality of the soul. A settled polarity was harder to establish for persons like ourselves because we sought it in the natural world of men and things; but once reached (as she had reached it) it gave the only satisfaction that could inform a life and last it out.

These were the processes that had supervened upon the separation in Hankow for the two of us. She had reached her central reality (which was also mine) and become part of it. As she came across the hall of the Metropole I knew that my world revolved about her. If this sounds like the language of sexual or romantic attachment it is the fault of the words, so hard to dig out pure from their tangle of associations; but in simple fact it was not so. The feeble, perfumed sentiments, the romantic illusions, the limited personal desires and disappointments of boudoir 'love' had no part in the moment (it was a moment sharp as a dagger); nor did they afterward influence the course of our related systems of thought and feeling in the spiral plunge to catastrophe. This tragedy may have contained love, but if so it was love resolved into the largest terms of which such personal emotions are capable, related to the whole life of mankind and the eternal effort of the

human spirit to find its own place in the universe.

She came across the hall, I turned and met her, and we both laughed.

'I knew you'd turn up,' she said. 'I expected you any day.'

III

For the next week everything in Moscow took its place for me as a subsidiary part of the continuous conversation with Rayna Prohme. It was a conversation in which no debate was possible. Fresh from China, imbued with the feelings and ideas of Hankow as they had been strengthened by the opposition of Peking, I had no desire to attack the decisions she had made. They seemed to me the best decisions. She was going to continue her work for the Chinese revolutionary movement as long as it was required, but when — as she foresaw clearly — the parts of that movement would disintegrate, sending its vital element underground and leaving its bourgeois remnant stranded on the surface, she wanted to take a direct part in the work of the forbidden and secret organization.

She had decided that life was not possible for her on any other terms: that she could not bear the spectacle of the world under its present arrangements, and that her place was within the organisms struggling to upset and rearrange it. This necessity was not wholly the result of social or economic theory, although she had a solid basis of training in the social sciences and was convinced of her solutions (the Leninist solutions); a deeper necessity had driven her onward. She felt a genuine relationship to all forms of human life. That was the essence of it. To her the Chinese coolie was another part of the whole life, rich, various, cruel, and immense, that she shared to the extent of her limits in space and time. She could not see a Chinese coolie beaten

and half-starved, reduced to the level of the beasts, without feeling herself also beaten and half-starved, degraded and oppressed; and the part of her that rebelled against this horror (her mind and spirit) was inflexibly resolved, by now, never to lie down under the monstrous system of the world. She was — to use Gerald Heard's word — 'co-conscious' with all other parts of the human race. Man's inhumanity to man seemed to her a great deal more than that; it was an inhumanity of one part of the same body to another. The Shanghai *entrepreneurs* who employed thousands of Chinese men, women, and children at starvation wages for twelve and fourteen hours a day were, to her, like the hands of a body cutting off its legs. Capitalism, imperialism, individualism, were more abhorrent than cannibalism, but had the same inner character. They differed from cannibalism in being more universal and more difficult to correct.

I had not her purity or courage, and could not feel these things with her clean, deep sureness. But I did feel them. As I have said, she had now reached her centre and was sure; I was only magnetized toward it. I was at once more complex and less integrated than she. Often my first feelings had to be chastened; hers were clear at once. Her individual impulses had been, by now, so subjugated and harmonized by her intelligence that the conflict was over: she was unified, integrated, and burned with a pure white flame. She was prepared for any sacrifice, up to and including death itself; petty questions (among which she included her personal destiny) could not disturb her any more. It was a marvelously pure flame, and even though I clearly could not hope to share its incandescence, it seemed to me that I must hover as near it as possible. Nothing else I had ever seen gave the same light and heat.

I decided to spend the winter in Moscow. The immediate problem was (of course) one of money: I had earned large sums and spent them in the past year, and the only way of getting through a winter in Moscow was to find editors or publishers who would pay for it. The matter was not easily arranged in Moscow itself, where cablegrams were expensive and letters slow. It was possible (if at all) only by going to London.

IV

How can I characterize the clash of influences that filled every minute of the next three weeks in England? I was like a fish that had learned to walk on dry land for six months, and now was plunged back into the ocean again; I was like a valley farmer inured to life on the top of a mountain, only to be thrown back into his lush native field when he could no longer till it. I found all my English friends unchanged; the pleasures of the mind and body, the agreeable diversions and preoccupations of modern Western life in the cultured upper class, had not undergone the slightest modification in all this time. These people were so sure of themselves, so accustomed to viewing the spectacle of the world without a direct interest in it, that they could discuss even the terrible alternatives of revolution with cool intellectual curiosity, neither feeling nor attempting to feel the need to choose between them. England — in spite of the General Strike of the year before — seemed as far from a genuine revolutionary situation as ever. Revolution was a melodramatic word without significance in these green fields and spacious houses, where any subject could be discussed and all subjects were of equal interest.

The crippling thing — the really disastrous thing — was that my friends in England were more intelligent and

better educated than myself. I might *feel* that I was right, that the moment in which we all lived presented a breathless intensity of meaning, that a decision was necessary if we were not to perish, but I could never *prove* it. They all knew too much for me, were too cool and logical and altogether superior to such alternatives. On one occasion I was so exasperated by a long argument in which I had been rather badly worsted that I took to baser weapons and pounded a friend of mine (it was Raymond Mortimer) with my fists, shouting, 'You damned intellectuals have no blood — no blood — no blood!' The outburst, however inevitable, was naturally taken by all present as proving the very thing I was most concerned to disprove: the illogical and emotional nature of the revolutionary thesis.

I seemed more than a little eccentric to my English acquaintances just then, for their intellectual fridity only drove me by reaction into excesses of statement and feeling. For a good part of the time I must have behaved (by any bourgeois standard) insufferably badly. I remember once when I went so far that a glazed look came into every English eye in the neighborhood. I was staying with the Nicolsons at Long Barn, and another of their guests was Mrs. Nicolson's cousin, Eddy Sackville-West, the heir of Knole. The devotion of all members of the Sackville family to that monumental house, which sits in the midst of its lovely park like a visible history of the race that made it, was as well known to me as to anybody present, but I forgot the fact when Harold Nicolson (prompted by his familiar imp), asked me this question:

'What would a revolutionary government, or a Soviet government, or a proletarian dictatorship, do with a house like Knole? Specifically let's take Knole, and leave the others out. What would a revolution do to it?'

The question seemed very interesting, and I answered it at length. The special value of Knole was architectural and historical, I said, and would be so recognized by any revolutionary government. It had no value as a health resort or home for workmen, for it was neither healthy nor properly arranged for such purposes; it would not, therefore, be converted to other uses, but would almost certainly become what it was, in fact, to-day — a museum of the history and taste of the English aristocracy from the sixteenth to the nineteenth centuries. Such a museum would find its best guardians and interpreters in the people who knew it best — in fact, in Eddy Sackville-West and Vita Nicolson, who could usefully become its curators.

Only when this speech had come to an end did I observe the faces of the two 'curators.' Mrs. Nicolson recovered first, and joined in the sudden laugh that turned the subject off, but I thought for a moment that her cousin was going to have a *crise*. I knew him only slightly then, and ought to have refrained from disposing of his house (not to speak of his own future) so cavalierly; but I had got into the habit, in the past six or seven months, of stating any idea as clearly as I knew how, with no nonsense about good taste or the behavior of 'gentlemen.' It seemed to me that the whole trouble with the upper classes, so far as I knew anything about them, was that they were afflicted by too much good taste and too many superstitions about being 'ladies and gentlemen' to form a correct idea of the materials of life. My temper of mind was — after six months of China and a week in Moscow — so different from theirs that their conventions and training, which obviously helped to make their company agreeable, nevertheless aroused the instinct of rebellion.

V

The reason, of course, can be guessed by anybody who has endured to the present point in this story: it was a defense. I was angry and alarmed, on arriving in London, to discover that the old world of comfort, pleasure, taste, diversion, and amusement still powerfully appealed to me; that the misery of nine tenths of the human race could seem dim and distant when considered from the midst of a well-supplied bourgeois dining room; that the things a Bolshevik — a working Bolshevik, like Rayna or Borodin — had to give up were things I valued.

This material seductiveness of the bourgeois world was strengthened by an attack on the revolutionary idea itself: I was always having J. M. Keynes quoted at me, and being told that the waste of life and wealth (that is, productive machinery) incidental to revolutions was uneconomic. My English friends, who were not themselves doing a thing to bring about the social rearrangement, always assured me that the rearrangement would take place; only, they said, it would take place in an orderly, democratic fashion under the parliamentary tradition. They pointed to their own advanced social legislation — unemployment insurance, death duties and income taxes scaled up to attack accumulations of capital, their pension system and the rest — as a proof of the capacity of a capitalist state to submit to orderly, progressive reformation.

That these arrangements were, after all, at the mercy of political accident, and that the so-called 'social legislation' of bourgeois governments could not possibly protect the workers against the results of such crises as war, overproduction, and speculation (the characteristic crises of capitalism, according to the Marxist view), were objections ruled out by the Englishmen

I knew with a succinct phrase: 'You want too much.' They believed in their own ability, or their race's ability, to achieve the desired ends by the methods of democracy, which, they believed, were 'slow but sure.' Little as I felt this to be the essential truth, I was forever being worsted in argument — forever being obliged to concede in my own mind, however strongly I protested, that there was a lot in what they said.

The sum of all my impressions on that visit to England would have meant nothing at all to Rayna or to Borodin. They were certain; their political philosophy never deserted them; they knew the economic bases of English upper-class life too well ever to be charmed by its graces. But I was (intellectually at least) far from certain. The process by which my desire for integration had become involved with, and centred upon, Rayna Prohme was not a purely intellectual process, or it could never have been affected by any amount of bourgeois charm. I remained convinced that the issue of revolution was the only genuine issue (the only 'live option,' as William James would have said) in the world I lived in, but my own position with respect to the revolutionary struggle was more dubious and uncertain than ever.

The effect of England upon me, at a moment so critical, was like that of a brake applied to a wheel. It slowed me up, made me waver and ask questions. The questions England suggested were personal ones. They went something like this: Why should you, a bourgeois born and bred, leading an externally agreeable life under the bourgeois system of society, try to do anything to change it? What does it matter to you if Chinese coolies starve to death, if boys go into the coal mines of Lancashire at the age of twelve, if girls in Germany die by the hundred from

tuberculosis and occupational diseases in the chemical factories? What do you care if the steel workers in Pennsylvania are maintained in conditions of life equivalent to slavery? Can't you forget about all that? You'll probably never starve; you can earn enough money with your silly little stories to lead a pleasant life; why not do so? You think revolution is inevitable, — or say you do, — and why not, then, leave it to other people — workmen, soldiers, Bolsheviks? It's their business, not yours; what have you to do with it? Are you prepared to give up all the pleasures of modern Western culture, everything from good food to Bach and Stravinsky, to work for the welfare of other people's grandchildren in a world you will never see?

The answer was, decidedly, no. That was what England had done for me in the short space of twenty-one days.

I went to Berlin at the end of October and stayed long enough to complete my arrangements for the winter in Moscow. I was as 'revolutionary' in conversation as ever, but I knew that I did not possess the spirit of self-abnegation required to follow Rayna Prohme in the course that now lay before her. Her letters during October had shown an increasing determination in her purposes. She was on the point of entering the Communist Party — not lightly or fashionably, as young men do in Paris and London, but with the intention of sacrificing her entire personal existence to its service. The whole thing made me unimaginably gloomy, and I could not foresee even so far as a month ahead, but I did know one thing: that I must make the most valiant attempt to save her, as a person, from absorption into the machine of the Party or the Komintern. I no longer cared if this seemed the effort of a vulgar, selfish, lazy, and cowardly bourgeois, for England had persuaded me that I was not a Bolshevik and

never could be one. The leopard cannot change his spots.

Harold Nicolson put me on the train in Berlin and Rayna met me at the station in Moscow. That was the kind of journey it was: not only a space-journey — not even primarily a space-journey, although the stations succeeded each other through Germany, Poland, and Russia with measured accuracy; it was an idea-journey, a trajectory between two worlds.

The train drew in to the October Station in Moscow before noon on November 7, and Rayna's fiery hair was the first thing I saw on the platform. I had been away from Moscow — far away from Moscow — for a good five weeks.

VI

Throughout that day and for the days that followed I was beset by indefinite and torturing premonitions. They were not correct, — what premonitions are? — but they were near enough to what did happen to assume — even at this distance in time — an awful significance. I engaged in a desperate struggle, from that first day onward, to keep Rayna from joining the Communist Party.

Of all the contradictions of the period, this was perhaps the worst. The pure flame that gave such light and heat — what was it? The centre toward which I was magnetized, the focus of the world as I saw it, was Rayna Prohme as revolutionary; it was not revolution alone and it was not Rayna Prohme alone, but Rayna Prohme integrated and set alight by her pure conviction. This was, in fact, my reason for being in Moscow. And yet from the moment I arrived I fought tooth and nail to get her away from her own essential centre — to recall her, by fair means or foul, to the half-world in which I wanted to keep on living.

When I use such strong words — 'desperate' and 'tooth and nail' — I mean everything they mean, and more. For six days and nights the struggle continued with hardly a respite. Her room was on the other side of my sitting room, in the adjoining apartment, and when either of us thought of a new argument we kicked on the wall; in two minutes — the time required to take down the innumerable barricades of iron, wood, and steel put up by my timorous landlady — we had met and started all over again. We talked until four or five o'clock in the morning sometimes, and the argument was forever renewed, never brought to an end. We neither of us got much sleep, but I was as strong as an ox and did not realize what a terrible strain the whole thing was on her nervous system.

No matter how bitterly I may have regretted all this afterward, it is the fact. When her physical fragility impressed me more than usual, I used it, too, as an argument. She had been having severe headaches for months, and they had lately grown more frequent; aspirin and phenacetin did not help them; sometimes in the midst of the argument a dazed stare would come into her eyes and she would say: 'Wait a minute. I must just be quiet for a minute; it's the headache again.' When it passed, I used to ask her how she proposed to endure the rigors of life as an active revolutionary when her physical resources were so limited. This particular argument had no immediate effect. She would laugh and say: 'In or out of a revolution, I've got to die sometime, and what does it matter?' Her disregard of her own personal destiny was so complete that nothing I could think of made an impression upon it. The arguments that did reach her were the general ones, those directed at the idea of revolution itself; and one of the most effective of these was the one I had suffered from in Lon-

don — the opinions of J. M. Keynes as shown in his recent booklet about Russia. I telegraphed to London for that booklet, but it never arrived.

It would be foolish to maintain that there was nothing selfish and personal in all this. There was. I have said that in September I already felt that I could not live without the light and heat that came from this extraordinary flame. In September I had had no doubts; I would have followed her into the Lenin Institute, into the Communist Party, to Korea or Japan or anywhere. In October I had been forced to reconsider; I saw, too clearly, my own inadequacies for such a life. In November I was no longer willing to follow her, even in mind, but struggled instead to bring her back from the certainty in which she dwelt to the easier world where men did not die for their beliefs — where they did not, in fact, have any beliefs if they could help it. This endeavor was selfish and personal, based, in the first instance, on a feeling that Rayna Prohme as a completed revolutionary instrument (in a year's time, let us say) would be a stranger to the lazy bourgeois I had recently rediscovered. She would be lost to me and to my world; in the sense of a bourgeois individuality she would be lost altogether, for her intentions were, even for a Communist, extreme.

She had decided to join the Party and enter the Lenin Institute to be trained as a revolutionary instrument. When she had completed her training she was to take service in one of the revolutionary organizations, probably in the Pacific Labor Bureau to begin with, perhaps afterward in direct work for the Komintern. Her special qualification coincided with her own desire, and she would be sure to be sent to the Far East.

No decision in life could be more final. The vows of a nun, the oaths of

matrimony, the resolutions of a soldier giving battle, had not the irrevocable character of this decision. Rayna was not taking it lightly; she had had four years of intimate acquaintance with revolutionary work, and knew what she was doing. Nothing I could bring up about the nature of the work or its effects made the slightest difference to her, for I found that she had considered it all before.

I was reduced, again and again, to the simplest forms of impotent argument — attacks upon the emotional nature of the revolutionary, attacks upon Rayna's personal structure.

'Of course the truth is,' I would say, 'that you derive a personal thrill out of the idea of being a revolutionary worker. It's sheer romanticism. Far more exciting than going home to Chicago and listening to symphony concerts! That's the truth of it. Whether the idea of revolution is correct or not does n't matter; you've got to have your thrill.'

I never said a thing like this without realizing at once how miserably specious and vulgar it was; but when I had exhausted all the legitimate arguments I could think of, wild stabs were the only form of attack left. Rayna, as it happened, understood the process too thoroughly to be disturbed by it; she knew that a remark of the kind was only a confession of weakness, of exhaustion, and, however weary she might be herself, she never failed to laugh. That laugh was generally accompanied by a polite admonition to use a little rudimentary intelligence, put into this form: —

'Don't be a damned fool, Jimmy.'

After seven crowded years this advice sounds as plain and recent as if it had been delivered ten minutes ago. I do not pretend to have acted upon it consistently or even most of the time, but at certain important moments, without preparation in thought or

association of ideas, it has suddenly broken through every surrounding circumstance and rung again in my ears, tone and accent and laugh and all, like an actual voice.

VII

On Friday, November 11, we argued almost all night long. It was the last argument. At the end of it, when every element in the problem, personal and general, had been gone over a thousand times, and Rayna's resolution was still unshaken, we said good-bye — not too solemnly, of course; there was always some lightness in Rayna's spirit; she could always laugh, even though it was not altogether easy. It was the kind of good-bye I can scarcely explain unless it is instantly apparent. We were to meet again the next day, but in the essential sense it was good-bye just the same. She was to go to the Lenin Institute on the following Monday, and I was going to leave Moscow as soon as I could bear to do so.

I asked her to do one trivial thing for me (I do not know what I hoped to prove by it). This was to dress on the following night in the golden dress from China that Soong Ching-ling had given her, to wear Bill's amber necklace, and to dine with me in the most flagrant luxury Moscow had to offer, at the Grand Hotel (Bolshaya Moskovskaya). This was before the Five-Year Plan, of course, and the Metropole had not yet become what (I believe) it was afterward, a luxurious establishment for foreigners. Moscow's most bourgeois place just then was the old Grand Hotel, where most of the foreign visitors lived. Since my arrival in Moscow, throughout this week's argument, Rayna had worn the same dress — a wadded green silk dress in Chinese style, the warmest she possessed. We had taken our meals either at the cheap café underneath the Metropole

or in workmen's coöperatives, where we could eat for very little, as neither of us had any money. I wanted one 'bourgeois evening' for myself, for the sheer pleasure of it, and to see her once more in that gold dress; but it is possible that I also hoped (madness, of course) that silk and flowers, music and white wine from the south, might accomplish what I had failed to do, and bring her back a little way toward the world she had been born into and was now surrendering forever.

'O. K.,' said Rayna. 'I'll freeze to death in that gold dress, I can tell you, but if I can borrow an overcoat and run like hell when we get out in the street, I'll do it. You shall have your bourgeois evening, but it won't make any difference.'

On the next day (Saturday, November 12) she went to see Dorothy Thompson at the Bolshaya Moskovskaya and fainted in Dorothy's room. This seemed a little alarming, but by that night it had been forgotten.

'I feel absolutely grand to-night,' she said. 'Silly of me to faint like that, but I do feel better now than I have for days. I think I'm going to enjoy the bourgeois evening.'

She looked — as she said she felt — grand. She was only a thin slip of a girl, with no particular stature or figure or conventional beauty, but her appearance was at all times lighted up by her expressive eyes and the glory of her hair. The red-brown-gold of her short curls gave her the look of a lighted candle when she wore the gold dress from China. It was cut severe and straight, Manchu style, with a collar, and was made of very plain silk the color of dull gold.

We went to the Bolshaya Moskovskaya and had our bourgeois evening. We even danced — twice. Dorothy Thompson came and sat with us and I told her what was happening. She seemed a little startled and incredulous.

'You understand what it is?' I said. 'It's the end of Rayna Prohme. No more Rayna. Finished. Revolutionary Instrument Number 257,849.'

The truth of what I was saying was too much to bear quietly just then, and I turned toward Rayna and pounded her thin shoulders in the Chinese dress.

'The end of Rayna Prohme,' I said. 'The end of Rayna Prohme.'

She moved away, threw back her fiery head, and laughed.

'It's the end even of Revolutionary Instrument Number So-and-So,' she said, 'if you don't stop beating me. What do you think I'm made of, anyway?'

The dinner, the gold dress, the certainty of the decision, the gloom of Moscow, the Napareuli wine and vodka, all together had operated to destroy my common sense that night. Even when I was not saying it, I was thinking it, and I said it often enough: 'The end of Rayna Prohme.' That night seemed as final as death itself.

VIII

I slept late the next day (Sunday, November 13), and walked slowly across to the Metropole in the afternoon to see if Rayna was there. (The Chinese Revolutionaries still had a small office there in which she worked when there was work to do.) As I came up the steps of the hotel, just where I had met Rayna on that evening almost exactly two months before, I ran into the American correspondent, Anna Louise Strong, and a little Chinese Communist called Chang Ke. Rayna had saved Chang Ke's life in Peking in 1926 by concealing him in the basement of her house, and he was devoted to her.

'Mrs. Prohme is very ill,' Chang Ke said in his flat, emotionless voice.

'She's at the Europe,' Anna Louise

said, 'and apparently she's fainted. Chang Ke came to get me. We'll have to bring her back here and put her in my room for a while.'

I went along with them to the Hôtel de l'Europe, a small hotel about a square and a half away from the Metropole. Chang Ke led us up the stairs here to a small room, the anteroom to the part of the hotel occupied by the Chinese Labor Delegation. One or two Chinese were sitting there quietly, and Rayna was lying unconscious on a couch.

I picked her up and carried her downstairs and through the streets. She weighed nothing; it was like carrying a child. Once she recovered consciousness enough to speak, asked if she was heavy, and tried to stand up. The people in the streets stared a little and then hurried along on their way. We reached the Metropole quickly, and there Rayna recovered enough to sit up in the lift and apologize for having fainted. But before we got to Anna Louise's room on the top floor she was gone again.

I was no good to Anna Louise in taking care of Rayna, and had nothing to do but walk about the town and wait for the doctor. Hours passed before the doctor came. Rayna had recovered consciousness, wholly or partly, and lay silent in the darkened room. Toward evening the 'neighborhood doctor,' a weary Russian with two assistants and an incredible amount of paraphernalia, arrived and set to work. These gentlemen took possession of the room and started to unpack all their tubes and packs and appliances, which cluttered up the whole floor. I was asked to leave, and did not return for an hour.

By this time Rayna was sleeping fitfully, and I learned that she had been given ether — which, as by chance I happened to know, made her deathly sick. For the rest of that night

she was alternately sick and delirious. I thought she should be taken at once to the Kremlin Hospital, and Anna Louise agreed with me, but nothing could be done without the Borodins, and I could not find them.

On the next day Moscow was covered deep in snow. It was bitter cold. I reached the Metropole in a state of unnamable terror, only to find Rayna quite rational and able to laugh again. She had passed a dreadful night and was very weak, but she blamed it on the ether. We moved her to a room of her own, and after Dr. Linck's visit she became cheerful again. (Dr. Linck was the German Embassy's doctor, whom I had called in.) As she felt better the curtains were pulled back and the room grew light. Many people came to see her — Madame Sun Yat-sen, Borodin, Chang Ke, Scott Nearing, Louis Fischer, and others. They spoke of plans, and what seemed to me the most hopeful thing of all — the thing that might save everything from wreck — was a possibility of Madame Sun's going to the United States. If she did this she wanted Rayna to go with her, and for two or three days in the middle of that week, in spite of the steady gravity in Dr. Linck's eyes when I talked to him, I convinced myself that all the problems could be solved at last.

The week of November 13 was actually less difficult to get through than the previous week had been. Dr. Linck had forbidden political discussion of any kind in Rayna's room, and had made her promise that she would obey his orders. This ukase brought out the patient's laughter.

'Will you tell me,' she said, poking at her pillows, 'what on earth anybody'd ever talk about in Moscow if political discussion was forbidden? What do you suppose we can talk about? I can't remember any other subjects!'

We found the other subjects readily enough, and throughout the week those conversations — never political — were, however difficult it may be to imagine it under the circumstances, a delight. We talked about everything under the sun except politics. She told me long stories about her childhood in Chicago and about her scapegrace younger brother whom she loved. I was never there in the mornings, and when I came in the afternoon she always had a budget of visits to tell me about.

I had never seen Rayna in better spirits than she was that Friday. We must have talked all afternoon and most of the night. Often I wanted to stop talking and let her rest, but she felt better than she had felt for a long time, and it amused her to lie there and recall a thousand stories of her early life, most of which were new and very funny to me. Her first husband (the New York playwright, Raphaelson, known as 'Raph') figured in these stories, as did her young brother and her sister Grace. They were all characters out of a past I did not know, the period before she had gone to China. In that whole day the word 'revolution' was only mentioned once. That was when she suddenly recalled Eugene Chen's good-bye to her in Peking two years before. He had said at the door of their office, just as he was about to take wing for Canton: —

'The Revolution is grateful,' and then, magnificently, 'The Kuomintang never forgets!'

We both laughed helplessly at this reminiscence.

She also talked a good deal about Bill Prohme, now thousands of miles away in Manila, to whom her affection and loyalty had been constant always. She even dictated a letter to him in which she said she was a little under the weather, but would be all right soon.

That night her illness took a turn for the worse, and although none of us yet knew what it was, its seriousness could no longer be concealed. She passed a bad night and was forbidden visitors in the morning. When I was left alone with her for the afternoon on Saturday she spoke to me in a very low voice. I had to lean over to hear what she said.

'The doctor thinks I am losing my mind,' she said, 'and that is the worst thing of all. He won't say so, but that is what he thinks. I can tell by the way he holds matches in front of my eyes and tests my responses. He does n't think I can focus on anything.'

She had spoken vaguely of this fear before, and all I could do was say that I did not believe it was well founded. But on the next day (Sunday, November 20) she felt certain that this was the case, and it kept her silent and almost afraid to speak, even to me. I sat beside her hour after hour in the dark, silent room, and the blackness pressed down and in upon us. Two or three times she raised her voice to say, 'Don't tell anybody.' I knew that this meant her fear that her mind was attacked, and I promised not to tell. Later in the afternoon we talked a little, and she suddenly agreed with a proposal I had made some days before — that when she was able to travel she should go to Germany for treatment. Toward night she said: 'I'll go to sleep for a while now, and when I wake up we can send a cablegram to Raph.' I never heard her speak again.

Dr. Linck came in the evening and said that a professional nurse must be put on duty at once. The nurse came and sat. Sonya and Vep, two Russian friends who had helped care for her, remained for most of the night in the little anteroom, and Anna Louise returned, too. The place was kept in complete darkness and silence. I was dazed with horror and felt absolutely

nothing throughout the night. I came and went; walked in the Red Square; went to the Bolshaya Moskovskaya and drank vodka; returned to the Metropole from time to time to speak to Sonya. During the night Rayna woke up once and asked Sonya for me, but I was across the square. When I reached the room she was unconscious again. She had wanted me, I suppose, to send the cablegram.

On his last visit the doctor said: 'The process I have foreseen has begun. It must take its course.' Although I heard these words quite clearly, and they were translated to me by Anna Louise afterward, they still did not carry their obvious meaning to my dazed intelligence. At three or four in the morning I went around the corner to the Savoy Hotel (where I had moved on the day after Rayna's illness began) and went to bed.

At seven o'clock that morning (it was Monday, November 21) the telephone in my room rang. Anna Louise's voice: —

'You'd better come,' it said. 'Rayna is dead.'

IX

Rayna Prohme died on Monday, November 21, 1927, and was cremated on the following Thursday, November 24 (Thanksgiving Day). I left Moscow the day after the funeral and have not been there since.

An autopsy held on November 22 by a group of Moscow professors revealed something that did not surprise me: Rayna had died of encephalitis, inflammation of the brain. It must have begun many months before, and all through this time she had been exactly, literally, burning to ashes, just as the shell she had discarded was to be burned to ashes at the crematorium. No human being could so irresistibly suggest the quality of flame without being consumed for it.

On the afternoon of the funeral we all marched for hours across Moscow to the new crematorium. There were delegations of Chinese, Russian, and American Communists, many of whom had never known Rayna. It was very cold, and as I walked along I became conscious of the shivering, bent figure of Madame Sun Yat-sen. Her income from China had been cut off; she was too proud to accept the help of strangers; she had no winter clothing at all, and was walking through the dreary, frozen streets in a thin dark cloak. The motor car lent her by the Soviet Foreign Office followed behind the procession; it was at least warm. I tried to persuade her to get into it, but she would not. She walked every step of the way across the city, her lovely face bent down on her folded arms. She had only recovered from her own illness a few days before, and her pallor was extreme. Even through the cold haze in which everything moved on that day I was aware that Soong Ching-ling was now the loneliest of exiles, shivering through the early dark behind the bier of her one wholly disinterested friend. The band played — out of tune — the revolutionary funeral march, alternating it with Chopin's. The maddening music, its lusty brasses a good half note off pitch, made the long procession hard to endure even for those who had never known Rayna.

Eventually — it was dark by now, and the great bells of the near-by convent were ringing for evening service — we came to the modern crematorium outside the city. It was brightly

lighted, square and spare. The bier, draped in the Red flag and covered with golden flowers, — asters, chrysanthemums, all the flowers of Rayna's own colors, a heap of gold and red and brown, — was placed on the platform. There were speeches in Chinese, Russian, and English — revolutionary speeches. The English sounded just as meaningless as the Chinese or the Russian. Then a signal was given, a switch was turned, and the golden mass of Rayna, her hair and her bright flowers and the Red flag, sank slowly before us into the furnace.

That night Borodin came to see me. He looked colossal in my narrow room as he walked slowly up and down, speaking. I was on the bed and do not remember having said anything at all. He had come to say good-bye, he said, and to explain why he had not gone to the funeral. On principle he never went to funerals. The mind must be kept resolutely on its purposes.

His voice was deeply moved, and he controlled it with difficulty. He did not look at me, but walked from the window to the door and back again.

'I know what this is,' he said. 'I know exactly. But what is needed is the long view. I have come here to ask you to take the long view — China, Russia. . . . A wonderful friend and a wonderful revolutionary instrument have disappeared together. But there is no use in anything unless we take the long view. Remember that. China, Russia . . . '

After a few minutes he shook hands and went away. In the morning I took the train to Berlin.

(The End)

THIS MYSTERIOUS UNIVERSE

BY J. W. N. SULLIVAN

I

PERHAPS to-day is the first time in the history of science when the universe has really become mysterious. In the days before Galileo the universe, although not explained on scientific lines, was nevertheless regarded as a perfectly understandable affair. Everything that existed was supposed to have its bearing on the destiny of man, and in this bearing was found the reason for its existence. Thus the precise way in which things happened was not a matter of much interest; the real point was *why* they happened. And, as everything was supposed to be satisfactorily explained from this point of view, there was nothing mysterious about the universe.

The science of Galileo and his contemporaries sprang from a different kind of curiosity. They were interested in the actual behavior of things. How, precisely, do stones fall? This was one of Galileo's problems, and he said that he did not think this question had occurred to any philosopher before him, although many of them had written a great deal about motion. As we know, he made experiments to find out, and his results contradicted the Aristotelian teaching of the time. This secured for them a good deal of attention, not because the precise behavior of falling stones was regarded as a matter of any importance, but because it was thought shocking that anyone should contradict Aristotle.

As another result of the attempt to find out how things behave came the discovery that the earth moves round the sun. This discovery also was objected to because the idea of a moving earth violated certain religious prejudices.

It was, perhaps, a fortunate thing for science that its early discoveries were regarded as shocking, for this fact secured for them a great deal more attention than they would otherwise have received. The mere behavior of things was not a subject which, in itself, would arouse any general interest. When Kepler went on to show that Copernicus was wrong in supposing that the earth moved round the sun in a circle, and that the actual path, as more precise examination showed, was an ellipse, the result, although of the greatest scientific moment, raised no popular interest. The damage had already been done. That the earth moved at all was the significant point; the precise way in which it moved interested none but scientific men.

These early discoveries, although they upset certain prepossessions, did not make the universe mysterious. The laws of behavior might have been unexpected, but they were not at all bewildering. And the subsequent generalization of these results by Newton introduced no element of mystery into the universe. Rather, it abolished mystery.

Nature and Nature's laws lay hid in night:
God said, 'Let Newton be!' and all was light.

This couplet expressed the general feeling of his time. It was thought that the key to the universe had been found — that all natural phenomena would prove to be explainable by the Newtonian technique.

During the nineteenth century this conviction grew, for the triumphs achieved by the Newtonian set of ideas were dazzling. The universe was so far from being mysterious that a nineteenth-century engineer, given the time and materials, could have made it. There were still certain details where our knowledge was not quite complete, but in all its main lines the universe was known. The only task of future science, it was confidently believed, would be to carry the measurements to another place of decimals.

The understanding was most complete, of course, for the material sciences. The nature of matter was known, and so were the laws of its behavior. The understanding of living things was not, it is true, so complete. The origin of life was an unsolved puzzle, for experiment had shown that life always came from preëxisting life. But, leaving that puzzle on one side, the theory of evolution had shown how all the existing forms of life could have developed, by purely natural processes, from some primitive living germ. And it was confidently anticipated that, when science was further pursued along these lines, all mental phenomena would receive an equally natural explanation.

Thus the Victorian scientific universe, large and grand as it was, was a universe from which all mystery had been abolished. It seemed, for a period, that science had reached finality. The first indication that the scientific scheme was not yet complete came when Maxwell published his electromagnetic theory of light. This theory, brilliantly confirmed by ex-

periment, could not be fitted into the general scientific framework. It raised a doubt as to whether the conception of the universe as a huge machine was really quite satisfactory. Nevertheless, the old outlook, in all essentials, persisted up to the close of the nineteenth century. It was admitted that there were problems not yet resolved, but it was supposed that they would, in time, yield to the methods that had hitherto proved so successful. These problems were difficulties, not mysteries.

II

It is during the present century that the outlook which dominated science from its inception has completely collapsed, and with its collapse has come the realization that the universe is mysterious as it has never before appeared to be in the history of science. The matter may be put briefly by saying that science has been brought to realize, to a far greater extent than ever before, the gulf between appearance and reality. There has always been such a gulf, of course. There has always been a gap between the teachings of science and the plain testimony of the senses. Almost any great scientific doctrine is an example of this. The theory that a gas consists of an immense number of little solid particles flying about in all directions, that heat is 'really' the energy of motion of such particles, that light consists of minute waves in the ether, that sound consists of waves in air, are all doctrines which give us a different picture from that provided by our direct sense impressions. But these doctrines all repose on conceptions that are familiar to us. The difference is chiefly one of scale. The notion of an atom is merely an extension of our experience of a minute particle — such as a grain of sand. Light waves are smaller than any waves we have

seen — but we have seen waves. Nature, as science revealed it, is evidently a much more fine-spun structure than it appears, but the lines on which it is built, as it were, are familiar. The reality behind appearance, as it had been revealed by science, although strange and unexpected, was not unimaginably different from anything we had experienced.

The universe of modern science has gone beyond the limits of the pictorial imagination. In fact, it is not too much to say that the pictorial imagination is now more of a hindrance than a help. The very basis of what we have called understanding — the reduction of the new things to familiar images — has been taken from us. Further, fundamental ways and habits of thought which we had always regarded as necessary have been shown to be misleading. Our minds have been developed to deal with the world of appearance, and, now that we have begun to penetrate beneath the world of appearance, the reality we find is so strange that we may well doubt whether man will ever be able to understand it.

Consider, for instance, those fundamental elements of our experience, space and time. There is nothing more basic and pervasive in our consciousness — except perhaps our awareness of our own existence. Space and time form the conditioning framework for every form of experience. And in our immediate and unquestioning apprehension of them they appear as distinct. Among all the objects of our awareness there are no two things more distinct than space and time. Modern science requires us to believe that this distinction is illusory. The reality that physical science investigates knows nothing, it appears, of this distinction.

According to relativity theory, space and time are not independent realities;

they are merely aspects of something which includes them both. The fact that we separate them is, so far as the physicist is concerned, merely a psychological peculiarity of ours. He has found, also, that this peculiarity depends to some extent on our state of motion. The inhabitants of a planet moving very much faster than the earth would be living in a very different space and time from ours. Events which are simultaneous in our time system would be successive in theirs. They would see objects as near together that we see as far apart. But their scientific men would discover the same reality behind these appearances that we have discovered. Their space and time would prove to be as illusory as our own.

Now this scientific vision of reality, if we take it seriously, upsets our most natural convictions. In fact it is doubtful whether, with the best will in the world, we can possibly take it seriously. In the four-dimensional reality of science there is no essential difference between time and space. There is no creative advance of nature. Nothing comes into existence from the future, and nothing vanishes out of existence into the past. Everything exists now. As Weyl has said, events do not happen; we come across them.

This notion, that time is unreal, is perhaps the most baffling of all the ideas that modern science has put forward. All our speculations about the past and the future assume the reality of time. Even if events do not happen, yet our coming across them would itself seem to be an event in time. It seems impossible to carry through consistently this idea of a timeless universe. For this reason many people think that the philosophical significance of relativity theory has been exaggerated, or at least distorted, by some of its expositors. The 'time' of the mathematicians is

probably too thin and inadequate an abstraction to be a satisfactory rendering of the time of our intuitions. And there are indications that, considered merely as a mathematical device, the merging of time and space has only a limited application. For phenomena on the grand scale, when the whole material cosmos is considered, time and space, according to some authorities, once more separate out.

Yet the notion that time is unreal is not at all a new idea. It has been held by many philosophers and mystics. It doubtless has some kind of intuitive basis. It is not merely a product of the ingenuity of the mathematician. But it seems impossible, in the present stage of thought, to formulate clearly our intuition of time. All the formulations hitherto given lead to unresolvable paradoxes. So that it is not a fatal objection to the time of relativity theory that it is still somewhat incoherent. And the theory of the four-dimensional continuum has achieved so much that, in spite of its puzzles and inadequacies, we may be confident that it will be an essential factor in any further synthesis.

This theory of space and time is the most 'philosophical' of all the new ideas that modern science has introduced. But this is the less surprising since space and time have always proved baffling to anybody who thought about them. They may have acquired new difficulties, but they have always been difficult. The old notion of infinite space, although it seemed to be a 'necessity of thought,' brought with it grave difficulties. For are we to suppose the stars to be scattered throughout this infinite space, or are we to suppose that only a finite region of it is occupied by matter and that around this region, in all directions, stretch infinite expanses of empty space? Either view presents difficulties. On the first view it can be

shown that, owing to gravitational attraction, there should be stars having very much greater velocities than they are observed to have. On the other hand, the idea that all the matter in the universe is collected into an island region surrounded everywhere by infinite emptiness seems somehow unreasonable. Einstein, as we know, solved this difficulty by his theory of a finite but unbounded space. This is a perfectly reasonable conception, provided we attribute a non-Euclidean geometry to space, and this is precisely what Einstein does. But, here again, attempts to picture this kind of space are not likely to be successful.

Recently the mathematicians have put forward the idea that this finite space is expanding. It is expanding faster and faster, and there are no limits to the size it may reach. Again we are presented with an idea that seems to be incomprehensible. For how can space expand? What is it expanding into? It would seem that the idea must be self-contradictory. It is not likely, however, that the mathematicians should have embraced a theory which can be so simply demolished. We have here another instance of the fact that in modern science reason has outstripped imagination. As long as the theory is logically consistent, the fact that we cannot picture it is irrelevant. Nevertheless it is certainly odd to reflect that every body in the universe is flying away from us with an ever-increasing velocity, so that our particular system will finally be left marooned, as it were, in space. It seems to add to the extraordinary pointlessness of this mysterious scientific universe.

III

The three fundamental entities of physical science used to be space, time, and matter. Space and time, as we have said, always presented difficulties

when they were thought about hard enough. But it is only of recent times that matter has become equally incomprehensible. The further the scientific analysis of matter has been carried, the more unfamiliar has matter become, until, in the present stage of science, it is strictly unimaginable.

The first stage in this analysis, the reduction of matter to atoms, was straightforward enough. For these atoms were only small particles. They retained all the familiar properties of matter — in particular the quality of substantiality. For most purposes it was good enough to regard them as little hard spheres, although it was apparent that there must be several kinds of them, differing from one another in their chemical properties and their weights. Certain scientific men, however, surmised that atoms were not simple homogeneous bodies, but that they probably possessed structure of some kind, different atoms having different structures. There was nothing in any of this which made any great strain on the imagination.

During the nineties a group of brilliant researches carried the analysis of matter a stage further, and some entirely new conceptions were imported into science. The surmise that atoms possess structure was found to be fully confirmed, and the first representation of this structure was given. It was found that an atom consists of a number of little electric particles. The element of queerness in this idea came from the fact that these electric particles are *wholly* electrical. They are not subatomic particles of matter carrying electric charges. They are constituted of nothing but electricity. As the writers of the time described them, they are 'disembodied charges of electricity.' In an atom, according to this theory, there is no 'ordinary' matter at all. All atoms, and hence the whole of matter, are wholly electrical.

This idea was found so baffling chiefly because the primary quality of matter, its substantiality, seemed to be taken from it. Electricity, like light and heat, had been classed as one of the 'imponderables' of nature.

But what is this quality of substantiality that we attribute to matter? It seems to be a mixed idea deriving from the facts that matter has weight and that it requires force to move it. It is this latter fact which is the more important. At a sufficient distance from the earth a piece of matter would weigh nothing, but it would still be regarded as substantial. It would still possess *inertia*. When it was shown, therefore, that electricity also possesses inertia, so that, for example, an electrically charged body has more inertia than an exactly similar uncharged body, the electrical constitution of matter became somewhat more comprehensible. It was granted that electricity might possess enough of the quality of substantiality to play the part of matter. But there was still a great deal that was puzzling about the theory. The laws obeyed by these little particles made it clear that natural phenomena take place in discontinuous jerks and not uniformly, as had always been supposed. And, a much graver difficulty, it appears that the behavior of these ultimate constituents of matter is not strictly determined. So far as we can make out, they will sometimes do one thing and sometimes another, although the surrounding circumstances remain exactly the same. The best we can do is to say what the chances are that they will do one thing rather than another. We replace exact prediction by statistics, as a life insurance actuary does. Is this because we do not know enough, or is it because a real element of chance, or sort of free will, enters into natural processes?

Contemporary opinion is very much

divided on this point, and it is probably the most important issue that is at present before the scientific world. Some of our leading scientific authorities hold that the ultimate processes of nature really are indeterminate, that the strict sequence of cause and effect hitherto assumed by science is merely an idea based on insufficient experience. Other authorities not only disagree with this, but find the assertion nonsensical. We are here in the presence of differences of opinion which are not dependent solely on scientific evidence; philosophical predilections here play an active part.

This is characteristic of many of the modern scientific theories. That purely 'objective' judgment on which science used to pride itself is seen to be an illusion. Scientific theories always assumed a metaphysical background, of course, but in most cases the assumption was made unconsciously. The scientific man, like most other men, described his metaphysical assumptions as 'necessities of thought' when they were merely very deep-seated prejudices. But science has now become more self-conscious, although there is not yet a perfectly frank recognition of the fact that science has reached a point where it is inextricably intertwined with philosophy.

IV

The mystery of matter has, of late years, become even more profound. The endeavor to represent the ultimate constituents of matter as little electrical particles has broken down. The 'particle' conception has been found inadequate. At the same time there is no other familiar conception with which it can be replaced. There are experiments in which these ultimate constituents manifest particle characteristics quite unambiguously. In other experiments they just as indu-

bitably manifest themselves as waves. These two characteristics are not of a nature that can be combined. We can make a blend of the words, — Eddington has suggested the composite word 'wavicle,' — but we cannot blend the conceptions. We know of no synthetic conception, no 'higher unity,' of which wave and particle are aspects. The two characteristics are combined in nature, but we can form no picture of the resulting entity. The reason for this inability must lie very deep. Any picture of a physical entity that we can form presupposes a space-and-time setting. It has been suggested that this fact is expressive merely of a mental limitation, and that, by insisting that these physical entities shall occupy a space-and-time framework, we so distort them, as it were, that we make them incomprehensible. The entities themselves, it has been suggested, actually transcend space and time. The difficulties they present come from the way we think about them.

If this be true, then the next step forward must come from such an effort of the scientific imagination as led to the creation of the non-Euclidean geometries. In that great effort what had been taken for two thousand years to be necessities of thought were shown to have alternatives. This example alone should be sufficient to warn us that we cannot be confident of any insuperable barriers to man's imagination.

Thus this mysterious universe may not always remain mysterious. The fact that we get, in many cases, contradictory answers to our questions may merely indicate that our questions are inappropriate. The stock of concepts with which we have approached the task of investigating nature happens to be inadequate. They have originated and developed in the course of the evolutionary experience of man,

and have been adapted to the needs of his form of life on this planet. This, it appears, is not sufficient, and indeed there is no *a priori* reason why it should be. As the founders of science realized, science is an adventure which may or may not be successful. There is no guarantee in the nature of things that it must be successful. But the success so far achieved, and the fact that the mind of man is a developing thing, give us a reasonable hope that the universe will not remain permanently mysterious. This is not to say that it may not always contain unexplored depths and present fresh problems. But progress may be continuous although it never reaches its goal.

At the present time, however, it must be admitted that the scientific imagination has not proved adequate to its new material. It seems that radically new concepts are required, but it has not yet been found possible to formulate them. In the meantime, scientific men have to do the best they can with the ideas already in stock. These ideas have been greatly subtilized and refined in the attempt to adapt them to the new scientific universe, but they were originally created to serve an entirely different outlook. It is for this reason that their present application seems to lead to results which contradict one another, such results as that a light-quantum is, at one and the same time, large enough to fill the lens of the 100-inch telescope at Mount Wilson and also small enough to enter an atom. This contradiction probably indicates that the notion of spatial extension should not be attributed to a light-quantum. But we do not yet know how to think about it in other terms.

The other fundamental entities of physics have similarly paradoxical qualities. Eddington has gone so far as to suggest that these paradoxes may prove irresolvable, that the universe may turn out to be irrational. Such a conclusion may be theoretically possible, but it is difficult to believe that scientific men would ever accept it. They will continue to believe that a logically self-consistent scheme of science will one day be constructed. In the absence of such a scheme, science can be no more than a collection of recipes of greater or less practical utility, and the chief motive for the prosecution of science would be gone. Without the belief that nature is rational and harmonious, science, to the true scientific man, would not be worth pursuing.

The present state of physics may be summarized by saying that the attempt to present the material universe as a rigidly determined scheme fixed in space and time has broken down. At the present time two directions are being explored. It has been shown that the law of strict causality cannot be maintained if we insist on fixing phenomena in space and time. If we give up the space-and-time representation, however, it may be that the law of causality can be preserved. In either case we have to get rid of some of our most deep-rooted habits of thought. And, even if we do this, there is no certainty that all our difficulties will disappear. That the universe is now so mysterious is due, it appears, to the way we think about things. But it may well be that we shall never hit on a way of thinking about things that will abolish that mystery.

THE STEEP PATH

BY KATHARINE HAMILL

I

'BEFORE we go any farther I am willing to admit that the bicycle idea was rotten,' said Augustus Foster.

His wife agreed both mentally and physically, but, being a woman of acquired marital tact, she allowed him the solace of his apology.

'Baedeker did n't say,' she said a moment later, 'that the hills always went up and never down.'

He was immediately happier, as she had known that he would be, and he slipped his walking stick through the strap of his rucksack so that he could push the bicycle with two hands instead of one.

'I only wish,' continued Mrs. Foster, 'that they were steadier things, so that we might rig up little harnesses and pull them instead of having to walk beside them and push.'

'Yes, or rent a pair of donkeys to pull them for us. And then we could ride the donkeys,' said Mr. Foster.

In spite of his disappointment and quite acute exhaustion, Augustus Foster made no mental resolutions not to rent, in the future, untried conveyances for use in unknown terrain. His enthusiasms were not so easily trodden upon. Because he had given his blind aunt a stereopticon for her seventy-fifth birthday he had not been prevented, a year later, from building a rowboat in the laundry before he realized that the door was too narrow to allow the rowboat to be got through

it. It was one of the traits which Ellen Foster liked most in her husband. It makes living with him so unexpected, she often thought; for example, just when you think you can't stand planning another meal he suggests a picnic in Central Park. And afterward planning a meal becomes a pleasure.

She watched his broad, heavily tweeded back as he walked and pushed in front of her, and she felt a slight twinge somewhere in the region of her heart. That might once have been love, she thought, and at another time disgust, but now it is only the natural result of physical exertion.

Coming to a place where the path widened out beside a low wall, they stopped to rest. Mr. Foster stacked the bicycles against the wall; his wife took off her pack and dusted a spot for them to sit on. They looked far down upon the Ligurian Sea, blue, calm, cool.

'If we were not so high up we could bathe,' said Mrs. Foster.

'We'll bathe in it before long,' said Augustus, 'if we have to roll down to it. Your face is quite dirty, Ellen.'

'It's grease,' replied Ellen. 'I must have rubbed my face after I fixed the wheel chain.'

She brought a melted chocolate bar out of her pocket and they ate, stickily and with no great pleasure, while the

sea beat on the cliffs below. The wall, though low on the near side of the path, dropped fifteen feet to the olive terrace on the sea side so that there was no getting over it into the shade. Adversely the wall on the far side of the path rose at least twelve feet above them. They were hemmed into the long steep tunnel of sunlight. Ellen wiped bits of melted chocolate into her face with a crumpled handkerchief. She very much wanted a cold drink, but she did n't say so. Augustus wanted a drink just as badly. Pretending to be unaware of the parched condition of their throats, he fumbled in his rucksack. He motioned to his wife to look at the fishing boat on the sea below, and when her eyes returned to the wall they rested on a large bottle of white wine, still cool from the inn cellar.

'Augustus,' she cried, 'I love you this moment more than I ever have before.'

They drank in long gurgling swallows from the bottle. Mr. Foster moistened the corner of his handkerchief with a few drops of wine and carefully cleaned his wife's face of chocolate and grease. She did the same for him. They smiled at each other.

II

They had not always smiled at each other. Now, as they resumed their wheel-pushing up the steep path, Ellen remembered the days when she was not a tactful wife, when the sight of Augustus's broad back would have annoyed her, when the thought of a holiday in Italy alone with him would have turned her sick. She knew now that it had always been within her power to make their marriage go. But at first she had n't known it. It had seemed to her, even while she was still passionately in love, that marriage ought to be a fifty-fifty proposition,

that Augustus should make concessions equal in number and importance to hers. When he had n't, she had stopped making concessions and declared war. The infuriating part of that period had been that Augustus had not recognized the declaration, had continued to act as though diplomatic and trade relations still existed. His unawareness, she remembered, had driven her to a state of active exasperation. She had wanted to hurt him, to find with the point of her malice the unprotected spots of his soul, and she thought it possible that she had not been entirely unsuccessful.

Augustus called over his shoulder that he thought he saw a break in the hill ahead. It looked, he said hopefully, as though the path might begin to edge around the mountain and thence descend rather than continue to climb straight to the top. And then they could fly down to the sea on these splendid bicycles.

For some time a disagreeable thought had lain unexplored in Ellen's mind. It was that if the path's descent was, as it was sure to be, as steep as its ascent, it would be, if possible, harder to hold the bicycles back than it was to push them up. The cobblestones might even be arranged in a long series of steps, quite unsuitable for bicycles to fly over with any comfort or safety. She kept silent about this less from tact than from superstition. It was the kind of thing that there was no use mentioning. In case God had n't thought of putting steps there, it was no good calling the possibility to His attention. She called reassuringly to Augustus and tried to ignore the increasing numbness of her right arm, caught as it was between the galling strap of her pack and the hot leather of the bicycle seat.

No further words were spoken as they struggled up the almost vertical

stretch to the gap in the olives. Then, miraculously, Augustus's hope came true. The path leveled off abruptly, and, as Boone and his men saw Kentucky stretched beyond the hard-won height of Cumberland Gap, the Fosters looked down on falling terraces of olive trees, faded red roofs on the hill slope, cypress and pine on the coast rock, and, below and around it all, the living green and opal of the sea.

'There must be,' said Ellen, 'some lines of poetry that would fit this moment.'

'There are,' said Augustus, 'but it seems to me that the moment is of itself sufficient.'

To their left was an iron gate, half open, and, leaving their wheels, they slipped through on to the beveled olive terrace. Under the olives were clover and poppies; through twisted gray-green branches was a long satisfying vista. There was shade, and the wall to prop one's back. There was more white wine in the bottle, and a package of strong, quick-burning cigarettes.

Ellen touched her husband's fingers as he held a match for her.

'All bicycles aside,' came between puffs, 'it was a swell idea.'

She slipped down on the grass and lay looking up at the sky. Her husband spoke to her.

'I'll quote you some poetry now, if you like.'

'Do.'

'An ant is crawling over your chin. Don't open your mouth or he'll walk in.'

'Splendid,' she said. 'Is it original?'

'Yes, a bit of realism. Only when you spoke he got frightened and went down your neck instead of into your mouth.'

'Will he bite, do you think?'

'Probably. I'm going to sleep.' He lay on his stomach, his head resting on his bent arm. Ellen thought about him.

III

He had been hurt by her, but he had never reproached her. If he had been a religious man he might have prayed for her. As it was, he had just waited. And she had, at last, realized that she would have to do the changing. It was n't that he was inflexible. It was more that he could n't dissemble; that he was always himself; that he could n't pretend.

And he was appallingly honest. She remembered her shock and rage when he had first mentioned a woman he had loved before. He had spoken of her casually, affectionately, and told Ellen of a trip they had taken together.

That had been in the first months of their marriage, when it had seemed to her unbearable that he should be capable of recalling a former love even though he had been so indiscreet as to have one. Later, much later, she was glad of this indiscriminate unburdening of his thoughts. She realized and appreciated its assurance of security. It was so with all that Augustus said or did. Those words and actions which were of themselves irritating were, in a larger sense, proof against irritation. But Ellen had not learned this in a moment.

Lying there on the warm, still grass, she meditated upon the man beside her. Was he the man whom she had loved so that no other thing mattered? Was he the insensitive monster whom she had grown to hate? Or was he the tender, philosophic blunderer whom she now regarded with dispassionate affection? The loyal, enthusiastic, and moderately stout companion who slept so confidently beside her?

She shook his shoulder and he wakened calmly.

'What is it, my dear?'

'Nothing — except that it's rather late and we ought to be on our way

if we expect to get to a place where we can spend the night.'

'Of course.' He sat up. 'Very refreshing, that little sleep. Did you get one?'

'No. I've been thinking about you, and wondering . . .'

'What, Ellen?'

'Nothing in particular. Just wondering.'

For a few hundred yards along the ridge of the hill they were able to ride their bicycles. Neither performed this act with certainty or skill. And the wheels bumped unsteadily on the uneven cobblestones. Ellen wanted to laugh. She saw Augustus and herself as a third person might have seen them. A middle-aged man and wife in tweed suits, with rucksacks on their backs, wobbling along the crest of a Ligurian hill on rented bicycles. She felt that the picture contained pathos as well as humor, but she preferred to see it only as comic. If the principal characters involved in a situation did not regard themselves as pathetic, could the situation itself be called pathetic? She thought not. If there were pathos, it existed solely in the mind of the third party, the onlooker who saw things only from his own point of view. She tried to distract this onlooker from the inference of pathos. Let him be amused, for she was willing to admit that the picture might be amusing, — a trifle whimsical, even, if he liked, — but she refused to have herself and Augustus regarded with anything bordering on pity.

Augustus stopped suddenly and dismounted. He caught the handlebars of Ellen's machine as she wobbled up to him and held them while she got down.

'Now we begin the steep descent.' His smile was less spontaneous than it had been earlier in the day. The path took a sharp bend to the right and plunged down through a thicket of

scrub pine. Ellen had difficulty not only in holding her wheel, but in keeping her feet from slipping on the stones. Augustus called to her to keep back, not to walk so close that her bicycle might bump his and upset them both. She tried to obey him.

The sound of voices came to them from below, and in a moment two young Italians appeared, walking easily up the path.

'Buona sera, signora. Buona sera, signore.' They touched their caps and did not look surprised.

Augustus stopped them and, in what he thought was Italian, asked the way.

'Dove vengo questa strade?'

'Come?'

'Questa strade? Vengo al albergo?'

'Si, si, signore.'

'Quanto distante?'

'Come?'

'Kilometre al albergo? Quanto?'

'Si, signore!'

They touched their caps again and were off up the hill, their legs carrying them without effort, their voices rising and falling in cadence.

'What did they say, Augustus?'

'I don't know.'

'What did you ask them?'

'I'm not sure.'

'Well, let's go on. They must have come from somewhere.'

IV

Ellen tried not to think of how she felt and looked. The branch of a pine tree caught her hair and she stopped to free it. Augustus went on, unmindful. How often he had done that! He had been so sure. So sure that she would follow and catch up to him. No need to look over his shoulder, to make certain that she was there. She wondered why she had stayed there.

The children, of course, for one thing. A mother could n't go away and leave her children, could n't even take them

from an unappreciative father. No, it was n't fair to call him unappreciative. He had been queer about the children, to be sure, but that did n't mean that there was no affection. Anyway, she could n't have disrupted their children's home. And was that the only reason she had not left Augustus? She had felt it to be at the time. Now she was not sure whether, even without the boys, she would not have stayed. It was true that she had taken a certain delight in hurting Augustus, but could she have administered this final, fatal thrust? She was thankful that it had never been necessary to decide the question.

They had just gone on living, he bewildered and patient, she sullen and uncompromising. How long they had been, those years! How bitter and frozen life had become in the little house on Sixty-ninth Street! She had made a sort of way of living for herself outside, but it had never held much satisfaction. She was not a woman to join clubs, to meet with other women over a lunch table. Her charities were personal, uncivic. Her talent was for making the lives of her intimates agreeable. And this she had refused to cultivate. She had spent, with the children as excuse, much time in the country. Away from Augustus she had sometimes been able to forget him and her hatred of him.

A sharp stone turned the front wheel of her bicycle and pulled it from her grasp. The machine fell and she stumbled and slipped to a sitting position beside it. Augustus heard her cry and came back.

'Are you hurt, do you think?'

'No. Only tired. May I sit just here for a minute?'

Augustus sat down beside her on the uneven cobbles. He looked uncomfortable, hot, and apologetic. Ellen was too tired to help him with the assurance of a smile.

'I don't think,' he said, 'that it is much farther. Unquestionably the path leads down to a village of some sort.'

'Yes,' she said. "'Even the weariest river winds somewhere safe to sea.'"

'You have poetry much on your mind to-day, Ellen. Are you quite well?'

'Quite, my dear Augustus. Only . . . I'm exhausted . . . you're exhausted. We need baths and beds.'

Augustus picked up a pine needle and began to chew it. He spoke with constrained casualness.

'We planned to stay at little country inns or even farmhouses along the way, did n't we?'

'Yes. That's what we planned.'

'If we should, quite by chance, come out on a rather grand hotel . . . quite expensive, with bathrooms and head waiters and an orchestra . . . it would n't be right, would it, to change our plans?'

'Our plans, dear, in regard to country inns and farmhouses, were changed about the time that the first blister on my left heel broke — three hours or more ago.'

'Have you blisters, too?'

'We'll bathe, dress, eat, drink, sit on a terrace over the sea, and then sleep,' said Ellen.

'I feel that we are nearly there,' said her husband. 'If you are strong enough to go on before you stiffen too much I think it would be well.'

They got to their swollen feet and started on. Soon they were out of the pines and down again to the olive level.

V

Ellen's thoughts were no longer on the present. She was reconstructing in her mind the scene of a dinner party which had taken place more than eight years ago in New York. She remembered very clearly how she and Augustus

tus had driven from Sixty-ninth Street to Gramercy Park through a wet snow-storm. The falling flakes had melted and run down the glass of the cab windows. Several times the driver had stopped to wipe off the wind shield. He had driven slowly and the street lamps had been blurred and yellow. She and Augustus had not spoken to one another. She had been uncomfortably conscious of his heavy breathing beside her in the darkness of the cab.

The dinner had been given in honor of the Viennese doctor, Aber. Augustus had wanted to go to meet the doctor, for whose work he had great respect. Most of the other guests had been scientists, except for Arnold Weinmar. Weinmar was one of those excessively rich, excessively wise and generous Jews who have helped to give meaning to the word philanthropy. Ellen had sat next him at dinner. She had met him only once before, although he and Augustus were friends.

She had been afraid that he would begin to talk of Augustus, simply because he knew that she was Augustus's wife. In order to avoid this possibility she had opened conversation by speaking of a play she had seen the week before. Ellen was not particularly interested in the theatre and she had had no foreknowledge of Weinmar's likes and dislikes. Nor had she been sure later of his real interest. But he had talked with an ease and sympathy that caught her mind and forced her interest. His discussion of modern drama had led back into the traditions of the theatre. He had told stories of d'Annunzio and Duse in Florence, of changes and dissension in the Théâtre Français. Then suddenly he had stopped. He had looked at Ellen from his warm eager eyes.

'But there are more actors off the stage than on it,' he had said. 'Now I am one. I behave as my public would have me behave. Like a weather vane

which moves with the wind, I shift and turn with the approval or disapproval of others. Because one person wants me to point east, I point east. Because another wants me to point south-by-southwest, I point south-by-southwest.'

Ellen had laughed. 'It is a fortunate thing for the world, then, that there are such weather-vane actors as yourself.'

'You are something like that, too, I think,' Weinmar had replied. 'You react — or at least you are capable of reacting — to other people as I do. It is a good thing to be able to do.'

'The best thing I can think of,' Ellen had said.

'No. Not necessarily.' And again Weinmar's eyes had rested on hers. 'There is another race of men, different and more difficult to deal with than ours. And it is part of our job to interpret for them.'

'What do you mean?'

'I spoke just now of our kind, yours and mine, as weather vanes. The others are compasses. One puts them down anywhere and they face to the north. Undistracted, unpretending, steadfast. You and I must look after them, protect them, but they are none the less good. They are, if anything, more necessary to the world than we. As a matter of fact, if I could rearrange society I would place each weather vane with a compass. In that way balance might be preserved.'

The snow had been firmer and had driven in hard pellets against the windows as Augustus and Ellen went home that night. Augustus had spoken of Aber, the Viennese, and then he had asked Ellen how she had gotten on with Weinmar. They had, she said, gotten on well.

'What did you talk about?' he had asked.

'We did n't talk. He talked and I listened,' she had answered. 'He talked very well indeed.'

'But what about?'

'About? I don't know.' But then she suddenly had known. 'Why yes, he talked about us, about you and me, about weather vanes and compasses.'

She had felt Augustus's bewilderment in the cab, but she had gone on speaking, more to herself than to him.

'About a weather vane that refused to change with the wind. About a compass that went right on . . . pointing north. . . .'

VI

Now, as they stumbled down along the path through the olives, she wondered what Augustus had thought about it all. Had he really suffered under her abuse? Had he understood and welcomed the change in her? What did he think of her? The strange thing was that, although he talked freely about almost everything in the world, he was inarticulate when it came to expressing what are called the deeper emotions. She was sure he had them. She wished that he might be able to talk about them. She would like to go over the whole thing with him step by step, to analyze his feelings in relation to her own. She'd try sometime.

'Ellen!'

'Yes.'

'I see water ahead. The sea, I'm sure.'

'What sea?' asked Ellen.

They were down almost within sound of the waves. The path lay along a ledge level with the roofs of a little town and then down a long flight of steps to the piazza.

'It makes me feel giddy,' said Ellen, 'to walk horizontally.'

The hotel was not quite as expensive and grand as Augustus had suggested, but it did have a bathroom, a head waiter, and a terrace.

After dinner the Fosters stretched themselves out in deck chairs on the terrace, sipped black coffee and brandy. Ellen put her hand on her husband's knee.

'Do you remember,' she asked, 'the night when we were driving home from dinner in Gramercy Park? The weather vane and the compass? It was snowing hard and you asked me what Weinmar had said to me?'

She paused, and for the moment the only sound was of the sea sucking against the rocks. Augustus turned and looked long at his wife.

'This,' he said, 'is a nice place. And it has given me an idea. Would you be terribly disappointed if I hired two small boys to push our bicycles back over the hill to their owner? Then you and I could rent a little sailboat . . .'

EDUCATION AND HAPPINESS

A Defense of Progressive Schools

BY JAMES L. MURSELL

I

THIS fall we placed our little daughter, aged nine, in a school of the type which, for better or worse, has come to be dubbed 'progressive.' All education, like life itself, is an experiment, and it is far too soon for final judgments. Perhaps those will arrive in twenty years — more likely never. But one effect is strikingly evident. The child is happy. It shows in the zest with which she scrambles from bed in the morning, devours her breakfast, and trots off for the day. It shines in her face. It influences her health. It permeates all her attitudes toward life. There is no doubt about it.

Certainly this seems a very good thing. But what does it all really amount to? How important is it? What is the probable tale of profit and loss? Is she missing something she ought to have? Is some tonic not being administered, some vitamin lacking in her spiritual diet? Will her growth toward the full stature of humanity be warped or stunted? Will the future years reveal some fatal flaw? Will she, in her maturity, have reason to reproach us for our decision? How genuinely significant is this happiness which her school is bringing her?

Something more than a personal interest prompts me to ask these questions. Professor Carl Joachim Friedrich, in his article, 'This Progressive

Education,' which appeared in the October *Atlantic*, raised just such questions, and in their most general form. I think he has done a notable service. He has brought to a focus those diffused yet urgent misgivings felt by so many intelligent people over the spectacle of 'progressive education.' Such misgivings are not to be treated lightly. They have, indeed, the profoundest implications. All too rarely, however, do they come to clear and considered statement. The progressives are vocal. Their critics usually offer little save rather inarticulate dubiety; and until such doubts — doubts widely held, please observe — are codified, to combat them is like trying to fight a fog.

Here, then, is an opportunity far too good to miss. Professor Friedrich has given inchoate questionings a definite shape. From being an irritating nuisance, they become extremely valuable. One is able critically to examine them, and to find out how deeply they cut into the texture of a profoundly different philosophy of education. When such Brocken mists coalesce into a spectre, the moment for action has arrived.

II

I say, 'My little girl is happy in her school. That seems to me excellent

prima facie evidence that it is a good school, and that her education is going as it should.' Professor Friedrich, and those who think as he does, all of them people whose opinions I must respect, would probably reply somewhat as follows:—

'Happiness is a most deceitful guide. The great gift of a good school should be competence, solid mastery. This is what life demands. Your daughter will perhaps have to earn her living, presumably as a professional woman—a physician, let us say. She will have to meet intense competition. If she fails to meet it, she will go down. To be equipped for such a battle she must have exact knowledge, refined skill. It is no matter of choice. She must learn these things whether she likes it or not. And to gain them she must pay the price of hard work and long drudgery. Teach her to follow happiness, and you are setting her eyes upon a will-o'-the-wisp which may lead her into disastrous morasses.'

What can I say to this? A great deal. I begin by admitting the force of much of the argument. If she wishes to be a physician she *must* know anatomy. If she wishes to be an engineer (which God forbid!) she *must* know mathematics. All undeniably true. Indeed, there is a still more telling illustration. That process of moving one's eyes over a page of print which we call reading is not, *per se*, amusing or entertaining. And yet not even Rousseau himself, wildest of all 'progressive educators,' denied that it is a useful and important trick for a civilized human being.

And yet my contention remains virgin and intact. Is hard work incompatible with happiness? The opposite is true, at least in my experience. Did Karl Marx spend twenty years of misery in the Library of the British Museum? Certainly he believed that there were a thousand thousand things

which he must know, and he subjected himself to the enormous toil of learning them. But I suspect that in so toiling he achieved a deep and satisfying content with which few men have been blessed. Who can read the noble epilogue to Gibbon's *Decline and Fall* without perceiving happiness and drudgery to be what they truly are—twin sisters?

There is a magic which unites hard work and happiness. It is the magic called purpose. Let my daughter desire urgently to be a physician, and she will have an appetite for all the stern intellectual fare she must digest. Let her desire urgently to be a musician, and technical drill will be a fascination, not a curse. Nothing worthy is ever achieved without toil. But the value does not lie in the toil. It lies in the achievement. The purpose makes the toil yield dividends, and converts it into a means of the highest happiness.

Moreover this magic called purpose is an absolutely necessary magic. Psychological investigation has shown again and again that mere routine, mere repetition, mere hard work, does not issue in effective learning. This is a matter, not of opinion, but of ascertained fact. Forty years ago it was conclusively shown that no perceptible difference can be found between the spelling of children whose schools drill them ten minutes a day on the subject and that of children whose schools drill them forty to fifty minutes a day. Mere quantitative grind as such profited nothing. The will to learn, the purpose to achieve, is what makes toil rich with value.

Professor Friedrich seems to suppose that the 'progressive schools' achieve less in the way of solid mastery than the conventional schools. Here again we are confronting not opinions but facts. The very reverse is true. Competent and sufficient investigation unquestionably reveals that progressive methods

produce not only happiness, but also more effective learning.

Why this is so I can show by a very simple illustration. My little daughter happens to be weak in her multiplication tables. Her school has very skillfully created situations which lead her to desire to be able to multiply. And she is learning her tables, and learning them well. If she had been placed under some stupid martinet, some fanatic for meaningless hard work whose educational alpha and omega was the daily stint, what would have happened? I know; beyond a doubt I know. Misery, futility, a lifelong aversion. She would have quickly developed that shocking *phobia mathematica*, that intellectual disease for the propagation of which our conventional schools are so greatly to blame. As it is, she is learning her tables well, and learning them well *because she is learning them happily*.

Let me say with particular care that I do not regard happiness as a sufficient condition of educational excellence. But emphatically I do regard it as a necessary condition. Assuredly the quality, the nature, the sources of happiness need to be examined. To say that my child should be allowed to do whatever she likes just because it happens to please her is the veriest rubbish. Yet we hear this idiotic misinterpretation of progressive ideas parroted again and again by people who ought to know better. There are many, many things which she must learn, and which will not be easily mastered. It is necessary that she learn them. *It is just as necessary that she desire to learn them or she will not learn them well.*

III

But Professor Friedrich advances yet another point which I am bound to consider before I can be reasonably satisfied that in placing my child in a school environment where she is happy

I am doing the best thing for her. And here again he puts in clear language a host of those vague, widely felt misgivings of which I have spoken.

'Your child is happy in her school,' he might say. 'But does not this suggest that the school lacks one most important element, the element of discipline? Moral and intellectual discipline is essential for any kind of effectiveness. It is achieved by the performance of uncongenial tasks under stern imperatives. An education which flowers in a perpetual happiness will inevitably deprive your daughter of such experiences, to her very great harm.' Certainly this is no warning to be shrugged away. And there is no doubt that many would agree with him in offering it.

About no problem in education is there a greater whirl of muddled thinking than this one of discipline. A great many parents and teachers entertain ideas about it which seem to me quite fantastically wrong. And nowhere do fallacious ideas lead more immediately to futile and destructive practices. So I am especially grateful to Professor Friedrich for the opportunity to meet the issue head-on.

What exactly do we mean when we talk about a person as disciplined? Concrete examples will serve us best. The physician who turns down an invitation to go duck hunting because he must look after his patients; the teacher who resists the lure of the golf links so that papers may be marked on time; the musician who labors for a year with the uttermost pains and particularity to perfect his mastery of a composition; the scholar who digs in and acquires a new language or a new set of mathematical techniques for the sake of his research — all these show the quiddity of what we call discipline. As a negative instance consider the young men described by Priestley in his *English Journey*, who had never known em-

ployment, who had no sense of responsibility, who could not be relied on to keep an appointment, who resented any kind of control, who lived planless yet not discontented lives.

To comprehend what discipline is is to recognize its supreme importance. If her school is not in the way of developing this quality in my daughter, the sooner I take her out of it the better. So I must ask, and anxiously ask, under what conditions discipline is acquired. To anyone responsible for the direction of a child, that question is very far from academic.

I think I know the reply which Professor Friedrich and many others would make. The essence of discipline, they would say, is the willingness to perform uncongenial tasks — to wash the dishes, to learn the language, to mark the papers, to practise the scales. Like all other behavior patterns, it is acquired by use. Very well, then, the school ought to impose uncongenial tasks, and require that they be done willy-nilly. Cube root, solid geometry, Latin grammar — such things possess a tonic value. They are little inevitabilities, and in submitting to them my child learns to submit to the greater inevitabilities which later she must face. When we make education enjoyable, we emasculate it. The school should be a place of compelling imperatives, not of happiness.

I believe that this is all wrong. The argument is buttressed by appeals to 'modern psychology,' and to the alleged 'conditioning' of various behavior patterns. The concept of 'conditioning,' however, is a piece of pseudo-scientific patter very similar to the older patter about faculties and instincts, and just about as valid. And modern psychology speaks with many voices. To say that it authoritatively and unequivocally 'teaches' any such propositions as those just stated is simply not true.

Discipline depends upon purpose. Uncongenial tasks, hard work, self-sacrifice, have in and of themselves no scintilla of value. To say they have is just like thinking medicine beneficial because it is nasty. They become valuable when they are recognized and accepted as necessary to the achievement of worthy and significant purposes. They become so precisely because they teach us the meaning and the cost of achievement. But it is the attainment, the result, — not the effort, however necessary, — that is worth while. Here quite literally the end justifies the means. There is no tonic value in toil as such. There is enormous tonic value in toil for a desirable and admirable goal. If I could write like a Flaubert, or play like a Horowitz, or experiment like a Compton, without any training or effort at all, should I lose anything? I cannot see that I should. On the contrary, I think I should be immensely the gainer. But this is not possible. Discipline arises out of the very conditions of achievement in life. And it begins only when we set before ourselves some intelligible aim, and muster our resources to attain it, and subject ourselves to the necessary labor.

I know a great junior high school managed on progressive lines. The principal told me that for an experiment all the teachers walked out of the building without notice, and stayed away a solid hour. And the work of the school went right on. When my daughter's teacher leaves the room, the class remains orderly, occupied, responsible. I know many and many a conventional school where no teacher dare step outside her room, because instant riot and bedlam would break loose. Where do we find the more effective disciplinary influence?

This is why I firmly believe that an education whose soul and centre is the imposition of alien tasks falsifies the

very condition of all discipline. The ideal educative process is simply the achievement, in spite of difficulties, of a significant purpose. The perfect school would be an institution where children were constantly aroused and stimulated to such significant purposes, and where the whole of their education consisted in achieving those purposes. The nearer any school comes to this (schools, like all human institutions, are imperfect, and none goes all the way), the more effectively it disciplines. Also — and here I come back to my main thesis — the concomitant of such a disciplinary process is happiness. Toil becomes radiant, thrilling, fascinating, when it is integrated with effective achievement.

How do I learn to think? By being given lessons in geometry because of its logical structure, or being forced to study Latin because of 'the rigidity of its grammar'? Ridiculous! Sheer superstition and argument by analogy! Sheer belief in psychological miracles! I learn to think by being made aware of cogent, impelling problems, and then setting to work to acquire the knowledge, the precision, the insight, the resourcefulness necessary to solve them. How do I learn to concentrate? By being told to sit still for fifty minutes, and read my book, and not utter a sound? This is much more apt to teach me only boredom, distaste, bewilderment. I learn to concentrate by having set before me some significant achievement — the writing of a paper, the performance of a composition, the carrying out of an experiment — and then being helped to see the crucial elements in the situation to which I must attend if I am to get anywhere. I learn to concentrate by mastering the *technique of achievement*. How do I learn self-sacrifice? By being forced to give up what I want just because I want it? No; rather by learning to give up what I want for the sake of what I want still more.

The process of discipline is gradual. It cannot be imposed complete at the start. It is the very process of mental growth. The child gains discipline through his childish purposes, and through the organization and integration of his life for their achievement. He does not and cannot gain it by having stamped upon him a set of adult behavior patterns. Along that line is educational futility, educational misery. An education which truly disciplines will bring to the child the happiness of increasing power, increasing mastery, an increasing sense of significant purposes, and an increasing ability to achieve them.

IV

But what of the future? Here once more Professor Friedrich poses me a question which I must try to answer. Again let me venture to put words into his mouth.

'A permanent characteristic of our civilization,' he says to me, 'is the large-scale organization of life. And large institutions require a certain degree of bureaucratic management. We find it in Harvard University, the Bell Telephone Company, the United States Geodetic Survey, everywhere. Hence one of the attitudes necessary in civilized persons is a submission to such control, the attitude of the good soldier who takes orders without cavil. Your progressive school, aiming at and producing happiness, does not engender such attitudes in your daughter. And to this degree it unfits her for life and compromises her future.'

Here too I am unable to agree. I doubt very much whether the most characteristic virtue, the *ἀρετή*, of a professor in Harvard University is a willingness to submit to orders from a bureaucracy! Such a willingness, of course, is desirable, and is a part of his professional competence. But surely it

ought to be a reasoned willingness, dependent on his perceiving that here is a necessary condition for the creative activities of teacher and scholar.

Theirs not to make reply,
Theirs not to reason why,
Theirs but to do and die,

may be an ethic appropriate to soldiers on the field of battle, but surely not to civilized men engaged in enterprises whose whole value lies in their individual quality. As a matter of fact, in modern war this very ethic is rapidly becoming outmoded, and the soldier is more and more required to show initiative and personal resource.

Certainly I do not want my daughter to grow up a wild and unhappy radical, forever kicking against pricks and battering her head on stone walls. But neither do I wish her to be a submissive creature, worshiping authority, unable to move without orders from above. I think she has the best chance for an effective life if she becomes intelligently and not uncritically coöperative with the social controls which surround her, rather than blindly docile or blindly refractory. Bureaucratic controls exist for one reason only, the maximum release of individual capacity and individual purpose. They are the conditions of maximum freedom within the social scheme. They have in themselves no kind of virtue. They are means, not ends, and should be accepted as such. If her school can teach her the high art of following and realizing her own purposes in the nexus of her social relationships, with all the adjustments this implies, it has taught her the art of social living. The process

of learning this art should and may be a happy and releasing, not a stultifying, repressing, misery-breeding process; and its attainment is about the finest guarantee I know of a life that is happy through effectiveness.

V

If this paper has seemed unduly polemical I apologize to Professor Friedrich and to all who may read it. Such has not been my intention. I have far too keen a sense of the magnitude and dubiousness of all these issues to wish to advance rashly, uttering war cries and clashing sword and shield. In education as nowhere else we see the concrete application to the practical problems of life of philosophic concepts.

Nearly twenty-five hundred years ago a troubled father came to Socrates with the question: 'What shall I do about the education of my two boys?' Our own answer to that question will depend, and immediately depend, upon our understanding of human destiny, and of the meanings of our intellectual, spiritual, and social life. Some of those meanings and their applications I have tried, most ineffectually, to expose.

It is because I have in the interpretations here suggested a faith sufficient to stake upon them my little daughter's well-being that I venture to close with a plea. Its essence is this. Progressive education should command the support, never uncritical, but always loyal and sympathetic, of all earnest-minded men and women who desire human life to go on to better things in the persons of their children.

MORE BOOKS BY THE ROADSIDE

BY ALAN DEVOE

I

IN the *Atlantic Monthly* for January 1934, under the title 'Books by the Roadside,' there was chronicled an experiment of mine wherein for three months, during the summer of 1933, I played the rôle of wayside *bouquiniste* in a small Cape Cod resort town. The recounting of these bookish adventures of mine brought me a heart-warming number of letters, and several of my correspondents wanted to know whether I planned to repeat the experiment the following season. Just recently I have heard from friends in that Cape Cod village who tell me that a considerable number of people appeared there during the 1934 summer for the sole purpose of seeking out that book-stall of which they had read in the *Atlantic Monthly*, and these people expressed regret that I had retired from my rôle as book purveyor.

Well, I have not retired. I suspect, in fact, that there is no such thing as a retired bookseller. He may abandon his shop, yes; he may be compelled by the infirmities of superannuation to spend all his hours in a wheel chair; or the shoves and pushes of inexorable fate may manoeuvre him to the remote hinterlands of Mombasa. But that is not to say that he has retired. Let him hear some little wisp of conversation, let him overhear such a stray word as 'foxing' or 'mint' or 'morocco,' and there wells up inside him such an excitement as that which traditionally

animates the retired fire horse when he hears the gong. He quivers with the urge to buy and to sell, to run his finger along a tattered shelfback or to inhale the heavenly smell of mildewed leather. In a twinkling he has made a purchase, and, even as he makes it, some special little corner of the brain which never, never atrophies is formulating vague plans as to how to sell it again. Retired, fiddlesticks!

When I left Cape Cod, after having disposed of my last copy of *The Memoirs of U. S. Grant*, I was not overwhelmed by superannuation nor did I disappear into Mombasa. I purchased a farmhouse and acreage in upstate New York. This has to a remarkable degree that incredible un-get-at-ability which seems to be uniquely the property of farms in upstate New York. The nearest village is five miles away, and the nearest Big Town twenty. From the village a little dirt road creeps cautiously out into the countryside, where it twists and turns and flounders in hopeless confusion for some ten or fifteen miles until, at long last, it connects with a 'highway' that really goes somewhere. It is on this little dirt road, at the point where it is most confused and forlorn, that our house stands.

I feel certain that, had it been suggested to the late Bernard Quaritch that such a place might be suitable for a professional bookman, he would

have cast his eye about the countryside, tenantless but for a handful of scattered farmers and silent but for the small voices of birds and crickets, and would have been moved to hearty derisive laughter. I suspect that our own Dr. Rosenbach, hearing that during last March the sole travelers past our door were two little boys on snowshoes, and that the most copious traffic ever recorded on this road during a single day was nine vehicles, would have been quick to tut-tut the possibilities of the site for a bookshop. And certainly I, having removed myself a hundred and fifty miles from the metropolis and having shaken off even the small sophistications of Cape Cod, was prepared to become a bookless rustic and never again to think in terms of quarto or folio. Three months have now elapsed since that spring day when I received by our Rural Free Delivery a book catalogue and, in an unguarded moment, permitted myself to glance through it. During these three months I have not had my hand upon the plough, nor yet upon the apple sprayer or the scythe. I have been bookselling.

But that, perhaps, is too magniloquent a term, implying a financial gain which has been strikingly absent from my summer labors. It is more accurate, and more suited to the spirit of the procedure, to say simply that I have been bookstalling. I have been conducting, that is, a wayside bookstall, but a bookstall compared to which my little side-of-the-road emporium on Cape Cod must seem Big Business indeed. My clientele this year has been composed of chicken raisers and hog butchers and other local folk, — if 'composed' is not too vast a word for such restricted custom, — with the occasional addition of some summer wayfarer in the region. In the course of ministering to the literary needs of these people I have had re-

enforced my conviction of last year that for sheer unexpectedness there is no life to match that of a *bouquiniste*.

II

Fifty yards from our house there stands — perhaps 'teeters' would be the nicer word — our barn. It is very close to the road, is eighty-seven years of age, and has chinks in it through which a Brontosaurus could comfortably make its way. It is, all in all, an arresting edifice, and the passer-by along our road could no more ignore it than he could ignore the ruins of Glastonbury Abbey or a towering segment of ruined Roman Wall. It has both bulk and a look of immeasurable antiquity. It cried aloud to me for the affixing of a sign, in keeping with its musty grandeur, which should read, OLD BOOKS 25¢. And ultimately, of course, I contrived such a sign. Because of my notable inefficiency as a letterer — enhanced, no doubt, by the fact that my tool was a paste brush and my medium a very stale and gummy tractor paint — this sign turned out most unexpectedly and delightfully. It looked, in fact, not so much like a sign as like a tablet bearing ancient runes. It was in perfect harmony with the venerable mouldiness of the barn and with the antique tomes which I purposed to offer for sale. I nailed it firmly to the barn, at a point a little higher than my head, and walked backward down the lane to survey the effect. It was good.

This old barn of ours, probably in common with other barns of similarly great age, has become in its senescence a storehouse of inexhaustible treasure. I have got hay from it and old nails, lengths of chicken wire and horn salve for cows, old bottles and an 1897 issue of the *Delineator*. And accordingly on that May day, when I had unfurled my bookish banner, I prowled in the

barn for some kind of counter which might serve as a stall in which to exhibit my wares. There was, of course, the very thing: an aged but by no means decrepit kitchen table, the top of which I discovered with great glee to be formed of a very old sign, reading, BARBERING.

Toward the middle of the last century one of the members of that old Dutch family to whom this farm was homestead for so long deserted the plough and the pruning shears for a life of seafaring. He came back, when he was an old man and had voyaged in every quarter of the globe, and contrived to make a modest living in his retirement by cutting the formidable beards of his farmer neighbors. And evidently, when he had become too old for even this occupation, he had thriftily refrained from destroying his professional shingle and had converted it, instead, into this sturdy table top. It seemed eminently fitting that I, the second of the only two professional men to occupy this house in ninety years, should make new use of this ancient symbol of my tonsorial predecessor. So I hammered in a needed nail or two and strengthened a few of the joints, and there was my book-stand.

After long deliberation, I placed in my wayside stall a splendid copy of *Diseases of the Horse*. I was willing to lose money on this item, for its real purpose would be to imbue the farmers with respect for my sound judgment. Next came Chester A. Reed's *Land Birds East of the Rockies*, for obviously country people must be interested in their native birds, and Gray's *Elements of Botany* in the woodcut edition of 1887. To these I added a number of other works on various branches of natural history, and also a few loose plates from Studer's splendid *Birds of North America*, the sumptuous folio of 1888, which I thought would be emi-

nently suitable for framing and for display in country parlors. Bearing in mind the religious tendencies of my clients, I leavened with *Methodist Hymns* (with vignette frontispiece of cherubim), *Prayers for Every Day*, and several kindred works, including one called *Memoir of Mrs. A. F. Tukesbury & Her Husband Deacon Tukesbury*. I did not know very much about this last (not even how it came to be in my library), but as it was published in the year 1850, and bore upon its title-page the words 'The Righteous shall be in everlasting remembrance,' I felt certain it must be a suitable work of piety. And then, because all the natural-history books and religious works at my command still did not make a very imposing array in my stall, I was forced to add a number of other books at random.

III

My season got off to a discouraging start. The first two days it rained, and during the next three, which were clear, no vehicle passed along our road but a truck belonging to the Highway Department. And then, on the morning of the sixth day, I perceived approaching — with tremendous rattlings and clankings, but barely perceptible progress — an ancient buggy. It seemed to take hours to arrive. I flew to my stall and with my handkerchief flicked the dust from *Diseases of the Horse* and brightened up the shelfback of the *Memoir of Deacon Tukesbury*. Then, with such excitement as Dr. Rosenbach may possibly feel when the bidding on a coveted item has gone to eighty thousand dollars and the outcome is uncertain, I popped into concealment behind a lilac bush. With unbelievable slowness the buggy drew near, and, peeping through the leaves, I could see that its driver and only occupant was a very aged man with a long white moustache and steel-rimmed

spectacles. He had, I thought, a distinctly bibliophilic look.

Had he seen my sign? Yes, he was reining in. The clop-clop grew slower and slower and finally stopped. The old man was peering with screwed-up eyes at my sign. He was descending from his buggy and approaching the stall. For only a moment more did I remain behind my bush, watching him bend over the stall and adjust his spectacles. Then, with what must have been a singularly unconvincing imitation of nonchalance, I strolled over to him. Even as I did so — even as I was clearing my throat for speech — he turned away from the stall and began clambering back into his buggy.

‘Good morning, sir,’ I sang out, still hopeful that his custom was not lost irretrievably.

He turned on the wagon step and peered down at me.

‘Humph!’ he said. ‘I thought that there was a mess of *vegetables* fer sale.’

The buggy rattled along the road and around the bend and out of sight. I contemplated my shiny calf-bound *Memoir of Tukesbury* and sighed. It was a great disappointment.

Actual customers did of course ultimately appear, and some of them were memorable. One, at least, I think I shall never forget. He was perhaps eighteen years old, and his face had a frankness and boyish charm that were delightful. He came striding along the road at a great rate, swinging a crude stick and whistling like an oriole. The moment he spied my sign his gait quickened, and when he reached the stall he beamed upon its contents with shining eyes. Obviously a nature lover, I thought to myself; perhaps he will buy the bird guide. I came out from behind my lilac bush and smiled at him. He smiled back very charmingly. I saw that he had already selected a volume and was holding it out to me. I took it from him; it was that breath-

takingly gruesome compilation called *The First World War in Pictures*.

‘Are you quite certain this is the one you want?’ I asked, looking into his happy boyish face.

‘Sure,’ he answered quickly. ‘Them’s the best kind of books in the world — books about dead people.’

I pocketed his quarter and he trudged away, whistling and beaming and taking little happy peeks at the pictures of mutilation, suffering, and death. I have never seen him again, and perhaps that is why, although his quarter was real enough, I occasionally suspect that he had stepped into actuality for but a moment, and has now gone back to his proper dwelling place in the pages of T. F. Powys.

There was no question of reality about the lady who on a sunny day in June approached my stall on horseback. She was the kind of young lady who used to be called buxom, and she had a buxom manner, all laughing and chortling and booming. She was gay indeed over so staid a title as Bunyan’s *Holy War* (the American Sunday School Union’s edition of 1841), and of course poor Tukesbury induced the wildest and most whoopsome hilarity. She was still gay and airy when finally she selected my two-volume edition of Montesquieu’s *Lettres Persanes*.

‘Oh,’ I said, as she clambered back on her mount and tucked Montesquieu inside the already straining waistband of her riding breeches, ‘so you read French?’

‘No,’ she replied, with a rippling laugh, and at that went clattering away down the road in an enormous cloud of dust.

Probably the most piquant feature of bookselling — certainly of that kind of informal bookselling which I especially cherish — is, as hinted earlier, its unexpectedness. The manufacturer of floor mops or mouse traps can make a fairly dependable survey of his

market; he can make sound guesses, based upon past experience, in the matters of supply and demand. But the bookseller, or at any rate the wayside bookstaller, cannot do these things. The unknowable in his bewildered life is public literary taste, and this is as uncertain and erratic and unpredictable as thunderstorms. I could not foresee that now, with my season coming to a close, the wretched work called *Diseases of the Horse* would still be, as Thomas Hood puts it, 'requiescing in melancholy brooding' in a corner of my stall. It could not be predicted, at the beginning of the summer, that these country people in whose lives birds play so large a part would display an apathy approaching outright hostility toward the works of Chester A. Reed. And not Roger Babson himself, I fancy, could have whispered to me that I should stock in large numbers the fictional works of Harold Bell Wright. But more of this later.

While presiding over my roadside book dispensary on Cape Cod I came to learn that all my guesses as to the marketability of particular volumes and all my shrewd analyses of customer character were almost invariably wrong. This uncanny knack of mine for error has again been demonstrated to me this summer. I had thought, at the beginning of the season, that there would be small call among the chicken fanciers and cattle breeders for the unearthly productions of Oscar Wilde. I find, instead, that among these people Wilde has a vogue which might please him as much as it would certainly startle him. In this connection, I have heard a verdict on *The Picture of Dorian Gray* which I think is possibly unique in the history of the criticisms of that gaudy tale. It was delivered to me by the old lady who does our mending, and to whom, with some dismal foreboding, I lent a copy at her request. 'I think,' she said,

when she returned it, 'I think it sure is a right sweet story.'

It puzzled me for a long while to account for the lack of briskness in my traffic in religious works. But now I think I know the reason. I think I have discerned it in the faithfulness with which my country clients attend church every Sunday, and I believe I descry a hint of it in the fact that there is no parlor table in the entire region on which there does not repose a mammoth Bible. My farmer friends, in short, are already loaded to the limit of endurance with the processes and the symbols of religion. I doubt if there lives any urbanite, save among the clergy or similar groups, whose life is filled with any such opulence of sacred texts, uplifting samplers, holy mottoes, and bulging hymnals as are to be found — a heritage from grandfathers and great-grandfathers — in any one of these country homes. And thus our neighbor the pig farmer who lives two miles to the south of us gazes with lacklustre eye upon the *Prayers for Every Day* that I proffer, and a perfect pall of unacquisitiveness falls upon him when he contemplates a memoir of that Deacon Tukesbury whose remembrance is everlasting.

IV

Unfortunately my professional activity as Book Purveyor to R.F.D. No. 2 proved a great deal more piquant than profitable. This, however, was scarcely a surprise. What did irk me was the fact that my profound curiosity concerning the literary tastes of the region had not been appreciably appeased. It was entertaining to know that there was no market among the horse owners for even the finest work on equine ailments, and to discover that in a countryside infested with feathered friends there were no takers for texts on ornithology. I had wanted, how-

ever, to know rather more than this. I had wanted a clue to the nature of the books that my farmer friends read around the kerosene lamp during the long winter evenings; I had hoped for a kind of vicarious peek into the texture of their libraries. This, quite plainly, was not to be had by bookstalling. And so, while the buckwheat fields still glinted white in the sun, and long before the last of our astrachan apples had been converted into jelly, I hauled down my bookman's banner and tucked away the stall in the barn and set forth on a round of calls. Ostensibly these were casual calls, for the discussion of egg prices and hoof rot and the like, but actually I was playing that rôle which Stephen Leacock calls 'snooopathic.'

The first discovery to result from my shameless spying was that in every home in this countryside there are two Basic Books, two volumes which form the nucleus of every library (and of quite a few libraries represent the whole). The first of these is, of course, the Holy Bible. The second is *Ben Hur*. Mr. Edward Weeks, in his survey of best-sellers, has listed *Ben Hur* among those volumes that have sold more than a million copies, and it is apparent to me that several hundred of that million can be accounted for in this immediate region of five square miles. To our farmer friends here *Ben Hur* represents romance just as the Bible represents philosophy, and it is quoted, I discovered, no less frequently. Such and such a thing happened 'just like it done in *Ben Hur*,' and moral lessons are emphasized by the parallel, 'the same like it says in *Ben Hur*.' I was particularly impressed by one old lady who told me with pride that never in her seventy-six years had she been outside the county, and who, when I contrived to bring Lew Wallace's volume into the conversation, referred to it simply as 'the book.' It

developed that *Ben Hur* was the only book she had ever read since her school days, and it manifestly had assumed a sacred aspect comparable to that of the Bible itself. *Ben Hur*, if my recollection is accurate, was published in 1880, and most of the copies which I found in these homes could not have been printed much more recently.

I had expected, in view of my Cape Cod experience, to discover in vast numbers the works of Charles Dickens. I came across only two copies, and neither of these, it turned out, had been read by its present owner. Substituted for Dickens in these libraries is Sir Walter Scott. Within a radius of twenty miles there must be, I think, literally thousands of volumes of the *Waverley Novels*. Nor are they present merely as shelf fillers. They are read and criticized and praised and discussed as though they had issued from the presses yesterday. Most popular of all is *Kenilworth*. I believe that it, with the exception of sacred texts such as *Ben Hur*, is hereabouts the most prized volume ever printed.

It was of great interest to me to discover which ones among the modern authors are most widely read. I wanted to learn what my friends thought of Ernest Hemingway, and how they liked Dashiell Hammett, and whether they judged Branch Cabell good or bad.

I found my answer, and it took my breath away. Not one person with whom I talked had even *heard* of any of these writers. Not a soul could I discover who knew the name of Robert Frost, and nary a Benet nor a Van Doren aroused the smallest flutter of recognition. It must be made clear here, if I have not already done so sufficiently, that these people into whose literary tastes I was making inquiry were not uneducated hayseeds or rural dolts. The explanation is far subtler than that. It resides, I dis-

covered, in their notion that Literature is something which belongs to the *past*, that it is a form of activity which was all over and done with years ago. They are aware, of course, that there are 'writers' nowadays, but they think of writers, in this present-day application, as connected with the production of newspapers and magazines.

It required a deal of probing to get to the root of this crotchet, but I think I have found it. The only newspapers which these farmer friends of ours see are the local papers printed in the surrounding villages. These newspapers publish neither book reviews nor general literary news. They convey no hint whatever that literature is still actively in the making. Publishers' advertisements, book criticisms, columns of literary gossip, and tons of publicity all serve to keep the city dweller perpetually 'book conscious.' There are none of these forces to operate upon our friends here. They are left to the notion that Literature emitted its last gasp in the year 1880.

This is not to say that they do not read modern books at all. They do. I found an imposing number of copies of *Tarzan and the Jewels of Opar* and a most extensive selection of the novels of Harold Bell Wright. Present almost as copiously as Walter Scott are the works of Gene Stratton-Porter (*Girl of the Limberlost* leading the field) and of James Oliver Curwood. The presence of these volumes, rubbing elbows incongruously with *Ben Hur* and Holy Writ, is again attributable to the local newspapers. Lacking book critics and book advertising to apprise them of current literary trends, our friends here turn for their literary information — even as for their information about

gingham dresses or wagon paint — to the fat catalogues of the great mail-order houses. However splendid these firms may be as retailers of other commodities, they are apt to be something less than satisfactory as literary mentors. They sell, of course, only such cheaply produced books or publishers' remainders as can be vended at cut-rate prices. Their ballyhoo about James Oliver Curwood is immense, and their Harold Bell Wright titles run into the dozens. Our friends buy these books in much the same spirit, and for about the same price, as they buy magazines. And then, having read them and having deemed them (with, I think, some justice) inferior to Walter Scott and Lew Wallace, they return once again to hugging their conviction that real Literature came to an end in the nineteenth century. As one man put it, when I asked him about his library and when I indicated the shelves of *Spirit of the Border* and *Two-Gun Harney* and the like, 'Oh, sure, I've got a lot of this-here sort of stuff, but I ain't got any what you might call *reg'lar* books.' A book to be 'regular' must have an imprimatur not much later than the Civil War.

My bookstalling and book-snooping season has concluded on a note of wonder. My wonder about the failure to sell *Diseases of the Horse*, and even my wonder about the lamentable coldness toward feathered friends, have been overshadowed. When, I wonder, will some hardy publisher undertake to tap — by the insertion of inexpensive advertising in little local papers — the huge resources represented by our friends here and their million counterparts? It will, I think, be a very happy day.

RELIGION IN ENGLAND

BY THE VERY REVEREND W. R. INGE

I

THE Editor has asked me to send him my reflections on the religious changes in England which I have witnessed since I first began to 'take notice' about seventy years ago. My readers must picture me as a little boy in the Yorkshire village of Crayke in Cleveland, the district of which my grandfather, the rector of Crayke, was archdeacon. It was a beautiful village of about five hundred inhabitants, on a hill rising steeply above the plain of York, six miles from the railroad, and cut off from neighbors of our own sort. The historian Lecky has praised the almost ideal life in these old country rectories, in surroundings of unspoilt rural loveliness. In one of them lived the old archdeacon, surrounded by thousands of books, an old-fashioned scholar who before he buried himself in a remote country parish had been intimate with the Oxford Tractarians, and remained until his death, in 1874, faithful to the churchmanship of Pusey and Keble. My mother told me of a visit of Manning to the rectory, after Newman's secession and before his own. My grandfather, who was deeply distressed at Newman's action, wondered what the motive could be for such a man to leave the National Church. 'A Cardinal's hat, perhaps,' said Archdeacon Manning.

The High-Churchmanship of the Tractarians was very different from our modern Anglo-Catholicism. The

'Puseyites' cared nothing about ritual. They were learned in theology. They were bigoted Anglicans; the awful fate of Korah and his company was impressed upon us so strongly that we should not have been much surprised to see the Methodist minister swallowed up by the earth. Sunday was a mitigated Puritan Sabbath; cards, theatres, and novel reading, though not forbidden, were discouraged. But we were taught to admire good literature, which our mother read aloud to us (an excellent practice) for some two hours every day. In spite of some prejudices, we had a splendid education, such as no children get in these hurrying days.

Class distinctions were much more accentuated in those days; but those who would understand English social history must realize that these distinctions were quite different in England and on the Continent. With us the sharpest line was not between the nobility and the commoners; it ran right through the centre of the middle class. On one side were all those who ranked as gentlefolk — a distinction conferred not by wealth but partly by belonging to a family recognized by the College of Heralds, and partly by a public-school and university education. An American may understand this queer prejudice by reading Miss Mulock's once famous novel, *John Halifax, Gentleman*. The Church was one of the few professions to which a gentleman

might belong; the others were the army and navy, the civil service, the bar, land agency, the higher branches of teaching and research, and (a little doubtfully) banking and medicine. Any connection with retail trade was fatal.

The effect of this was to establish an unfortunate social barrier between the Church of England clergy and Nonconformist ministers, most of whom came from the trading class and had no university degrees. There was thus no chance of terminating the schisms caused by the defection of the Methodists and other sects, which were made wider by the snobbishness of the Church and the bitterness of the Free Churches. All this sounds very silly to an American; and so it was. But caste was an antidote to the worship of wealth, which was more undisguised when these prejudices disappeared. In any case, this source of alienation between Anglicans and Nonconformists has now practically vanished. There is very little snobbishness in England now, except among 'class-conscious' socialists and their toadies. Those who used to be 'the gentry' do not think about class at all; they have forgotten their pedigrees and their coats of arms. The sons of peers are only too glad to accept positions in business houses.

This change ought to have promoted a rapprochement among the reformed churches in England; but the growth of Anglo-Catholicism, with its peculiar theory of the mechanical devolution of a 'valid' ministry from the Apostles to Catholic priests, has fortified an old prejudice with a new argument. At present a voter for our Church Assembly has to declare that he is not a member of any other religious body. (This incidentally disfranchises the King, who is a Presbyterian in Scotland.) In my boyhood about one third of my grandfather's parishioners, including some of the best, went both to church

and to chapel. Stiff Anglicanism has now driven these waverers into what its champions call schism. Practically, they divide all other Christians into those who unchurch them and those whom they unchurch.

II

The credit of awakening a social conscience in the Church of England belongs chiefly to the mid-Victorian Broad Church group headed by Charles Kingsley and Frederick Denison Maurice. At that time there was much to arouse indignation in the condition of the poor, though our socialistic historians have exaggerated the facts considerably. The truth is that England did not recover from the Napoleonic War till about 1850, when a period of great prosperity began, and from that time the economic position of the laborers improved steadily. The Anglo-Catholics began to be interested in social legislation when the *Lux Mundi* group — Charles Gore, Scott Holland, and their friends — gave a new direction to the activities of that party. In the last ten years their interest has somewhat abated, partly because the wage earners are now able to take good care of themselves, and partly because in the extreme churches there is a tendency to excessive parochialism or rather congregationalism, an absorbing preoccupation with the church services. But the court chaplains of King Demos are always in evidence, especially when a Labor government is in power.

The Evangelical party has changed quite as much as the Anglo-Catholics. Trollope gives a repulsive picture of the Slopes and Proudies of the mid-Victorian age — a caricature, of course, but Sabbatarianism and bibliolatry were rampant in this school. The advance of science and Biblical criticism hit this group very hard. It was hardly possible any longer for an educated man to

belong to it, and many sons of Evangelicals went over to the opposite camp. Now, however, there is a growing school of Liberal Evangelicals, who are prepared to accept the new knowledge. They have realized that the Bible is *not* the religion of Protestants, as Chillingworth said it was. The religion of Protestants is personal devotion to Christ, the acceptance of the standard of values revealed by Him, and the type of 'mystical' piety of which the Quakers are prominent witnesses. These new Evangelicals have no prejudice against appeals to the eye and ear in public worship. The bare ugliness of Protestant worship has disappeared. The same tendency is very apparent in Scottish Presbyterian churches. In some of them the furnishing of the building and the type of service approximate very closely to the Anglican model.

The Broad Church or Liberal party has so far leavened the two historical parties that it has almost lost its *raison d'être*. In my young days, the names of Stanley, Jowett, and Colenso were mentioned with horror, and the very mild volume, *Essays and Reviews*, was nicknamed *Septem contra Christum*. The recent High Church manifesto, *Essays Catholic and Critical*, would have staggered Keble and Liddon. But the limits of concession to Modernism are still undetermined. The movement has split into two sections. On one side are the Liberal Protestants, like Harnack, who, while discarding the miraculous, revere the historical Christ as our perfect exemplar and the final revealer of ethical religion. They necessarily take a somewhat pessimistic view of Church history, which under Catholicism seems to them to have receded further and further from the simple moral ideal taught by Christ. They tend also to regret the invasion of an Oriental religion by Greek metaphysics and sacramentalism. The other section — the Modernists properly so

called — declare that it is impossible to modernize Jesus of Nazareth without distorting history in the service of edification. The historical Jesus, the boldest among them say, was an apocalyptic prophet who predicted the sudden end of the existing world order by a supernatural intervention of divine power. The Catholic Church, which was born out of this baseless expectation, owes but little to the historical Christ. 'We acknowledge as it were two Christs,' says Loisy; the one a Jewish peasant 'of limited intelligence,' the other the ideal object of the Church's worship. The Church, a living and growing organism, takes for this school the place of the Galilean prophet. The Catholic Modernists had a strange notion that this apologetic might be accepted as legitimate by the Roman hierarchy. When the Pope denounced it as 'a compendium of all the heresies,' some of the Modernists were silenced; others, like Loisy himself, a critic of great penetration but unreasonably suspicious of the value of the documents, severed his connection with organized Christianity altogether.

Liberal thought in England is less uncompromising, and tries to steer a middle course between German Liberalism and Modernism. Some of our most prominent theologians are Christian Platonists with a tendency toward mysticism. These rightly contend that the alliance between Platonism and Christianity began very early, as early as Saint Paul, and that it is impossible to tear Platonism from the side of Christian theology without destroying it. This is the type of religious thought with which I personally have most sympathy, and I have devoted much of my life to following up the paths indicated by it.

III

The study of mysticism has made great progress in my lifetime. Mysti-

cism means the practice of the presence of God; its typical activity is prayer, the classical definition of which is 'the elevation of the mind to God.' Mysticism assumes that this communion between the human soul and God is not only possible, but is a fact of experience. Philosophically, mysticism rests on a psychology of the Platonic type. Man consists of body, soul, and spirit. The spirit belongs essentially to the eternal spiritual world, and in proportion as 'soul becomes spirit' we 'have our conversation in heaven,' even during our earthly probation. It is a law of life that we can only know what is like ourselves; spiritual things, as Saint Paul says, are spiritually discerned. The Greek thinkers taught that salvation consists in 'becoming like God,' or (which for them was the same thing) in 'becoming immortal as far as possible.' The way to this liberation of our personality from its lower attachments is by a life of duty and self-discipline, and by concentration of our thoughts and reflections on divine and spiritual things. The so-called mystical phenomena — trance, ecstasy, abnormal visions and auditions — are not a necessary part of mysticism, and no doubt are often the result of nervous overstrain.

Psychologists, such as William James, have been keenly interested in mystical literature. But, though their researches are of great value, they are unsatisfactory from the religious point of view. The subject of psychology is the study of states of consciousness in themselves. It cannot, while it confines itself to its own domain, discuss the absolute objective truth of the convictions which the mystics hold; and most psychologists are mainly interested in unusual and pathological manifestations of the religious instinct. This limitation has the appearance of prejudging the case against the mystics, most of whom are really quite sane. They, on their side, are not interested

in psychology, but in revelation. If it is not God who speaks to them, their faith is vain.

I have long thought that the evidential value of what it is the fashion to call religious experience is far greater than is usually recognized. In a sense, no doubt, the mystical vision is not transferable; it is even indescribable. But when we find a large number of persons, separated in time, place, and even in religion, agreeing closely in what has been shown to them in their quest of the pearl of great price, it seems only reasonable to believe that they are speaking the truth, and that a whole-hearted devotion to a saintly life is in fact rewarded by the gift of 'seeing the invisible,' as the Epistle to the Hebrews says. Now that the old arguments from miracle and prophecy have quite lost their cogency, we cannot afford to neglect the confirmation which the mystics offer us, not, to be sure, of alleged events in the past and future, but of what the religious mind really desires, an assurance that there is a spiritual world, and that it is possible for man 'in heart and mind thither to ascend.'

Parallel to this revived interest in mysticism there is a strong revival of institutionalism. The heart of religion, we are now told, is not rational conviction of the truth of dogmas, but worship, cultus, sacrament. Religion is not, as Professor Whitehead says, what a man does with his solitariness, but rather, as Royce declared, loyalty to a beloved community. The Church is primary; philosophy and mythology are secondary products. Thus we find a new ecclesiasticism, a new emphasis on the religious corporation and the idea of a divine society. This tendency has been strongly marked in England, where Anglo-Catholicism has gained in popularity; and there is a steady trickle of conversion to Rome. It is rather the fashion of young men of letters

to become Roman Catholics. They are attracted, it may be, by the uncompromising authoritativeness of a great religious society, which, when submission has once been made to its claims, presents its members with a singularly coherent and consistent scheme of beliefs, and with a very effective method of mind cure, evolved empirically and brought to great perfection. This kind of religion makes a wider appeal than the individualistic mysticism of which the Quakers are the salient example. But the influence of this latter type is far more extensive than the numerically weak membership of the Society of Friends.

Those who speak of the decay of religion in England generally appeal to the dwindling numbers of those who attend church on Sunday. This, however, is a very poor test. An educated population has now many other ways of satisfying its spiritual needs; and it must be owned that our service books are very ill adapted to the tastes of those who have grown up without the long traditions which alone make our creeds, our ritual, and our formulas of worship intelligible. Why, the working-man may say, should I 'think upon Rahab and Babylon'? What have I to do with Sihon king of the Amorites and Og the king of Basan? Can I be expected to understand the Athanasian Creed? The severance of our town populations from the old traditional culture, based on Palestine, Greece, and Rome, is quite enough to account for our half-empty churches. (Many of them, however, are by no means empty.)

But interest in religious questions is very keen among us. Foreigners were amazed to hear that one of the most animated debates in the House of Com-

mons in recent years was on the question whether the new Anglican Prayer Book should be authorized. Some churchmen were indignant at this 'interference' of the State with ecclesiastical matters. They ought to have been very thankful that the laity in our country think that the conduct of divine worship is their concern. It is a healthy sign that the most vital contributions to religious thought and even to devotional literature are the work of laymen. It is not so on the Continent. Alfred Loisy said to a friend of mine, 'My books are not widely read in France. The Catholics are not allowed to read them; the others are not interested.' In no other European country are popular scientific books, such as those by Jeans and Eddington, best sellers, as they are in England. And those who read them are far more interested in the religious and philosophical implications of the new knowledge than in mathematical arguments which only specialists can understand.

It is very difficult to predict the future of Christianity in England. Protestantism is the democracy of religion. If we lose our liberties, like most of the Continental nations, whatever we are, we shall not be Protestants. Personally I believe in liberty, and I cannot picture my countrymen living under a dictatorship. Except under a repressive régime, where freedom of thought is not tolerated, fundamentalism has no future. The Church must come to terms with science. This will involve great changes; but if Christianity is essentially a way of living, based on the standard of values which Christ came to reveal, I believe that it will survive by its intrinsic truth and correspondence with the deepest needs and aspirations of human nature.

WITH THE A. E. F.

From a Surgeon's Journal. IV

BY HARVEY CUSHING

[HAVING been appointed Senior Consultant in Neurological Surgery to the A. E. F., Dr. Cushing on June 14, 1918, was detached from Base Hospital No. 5 and sent to the Medical Headquarters at Neufchâteau in the Vosges. — THE EDITORS]

July 4, 1918. PARIS

La Fête de l'Indépendance, and they were actually celebrating it in England! Here it has absorbed everything. Even Bastille Day has been fused with this our own national festival. An actual holiday for *tout Paris* — all the shops closed. The city began to be decked out yesterday with intertwined American and French flags, and Old Glory floats on the very tip of the Eiffel Tower. A beautiful day — everyone much cheered by the fighting qualities shown by our 2nd Division culminating in their recent attack at Vaux near Château-Thierry. Commanding generals, premiers, admirals, and presidents send telegrams of felicitation. In a note which is given wide publicity Secretary Baker lets out the actual number of troops that have come over — 1,019,115 in all — six months ahead of schedule.

De Martel had sent word to say that the meeting of the Société de Neurologie was called off, and would I go with him and Major Jarvis, the C. O. of the Astoria Hospital, to see the

review? No possibility of seats, but he had secured three tickets for standing room reserved in a balcony. Remembering the uncertainties of sitting astride a wall just a year ago, I accepted with alacrity. We joined the holiday crowd bound for the place of ceremonies, climbed the back stairs of a building on the corner of the rue Pierre-Charon and the Avenue du Trocadéro, — after to-day to be the Avenue du Président Wilson, — and found ourselves on a narrow fourth-story ledge looking down on the Place d'Iéna. The broad thoroughfare down which the troops were to come stretched directly in front of us — the equestrian statue of Washington and reviewing stands past which they were to march lay just at our feet.

Soon pundits began to arrive in shoals to fill the six large tribunes — diplomats, soldiers, sailors, ambassadors, politicians, in blue and khaki and black, with a dash of red here and there on British Staff Officers and on Joffre's legs, for he still sticks to his old uniform; Poincaré, Lord Derby, Mr. Sharpe; Pau, with his empty sleeve; General Dubail, the Grand Chancellor of the Legion of Honor; General Guillaumat, the Military Governor of Paris; Lloyd George, who had just come from somewhere; Clemenceau (loud cheers for the idol of the people); the Diplomatic Corps, the Senate, the

Deputies, the Municipal Council, Ministers of Commerce and of Affairs Interior and Exterior.

After some speeches (to us inaudible) by the President of the Senate, by the Minister of Foreign Affairs, by Mr. Sharpe and some others, the Garde Municipale moved aside, their band struck up the *Chant du Départ*, and the troops began to pour down the avenue toward us. First a few French dragoons, and then, after the bands of the 2nd and 4th Divisions, came samples of our American troops, perhaps 3000 of them, in service caps, very sturdy and marching superbly. They were followed by platoons from the various regiments that have been in the line — marines and others, wearing tin hats, rather straggly, tired, and disheveled. Next, after a contingent of American nurses, came more French dragoons, and then with gleaming bayonets waves of *poilus* — glorious in their *horizon-bleu*. For some reason they always make me tearful, but de Martel said he had never before appreciated how squatty they were, compared to the Americans. While all this was going on, three dare-devil airmen were swooping and cavorting and looping about, skimming over the housetops and roaring over the Place. Well — it was a great and stirring show! The procession continued down the Champs-Élysées and there were more speeches, I believe, before the Strasbourg monument in the Place de la Concorde. '*Nous pouvons envisager l'avenir avec sûreté.*' . . .

Monday, the 22nd July. 9 A.M.
SÉRY-MAGNEVAL

Times and dates are difficult to figure out. This must be about 5 P.M. Sunday afternoon of perhaps next week. It's hot and quiet — the birds chirping — the hornets and flies troublesome. There's a smell of hay about as I lie on the grass in front of a square

U. S. Army tent which is to be shared with Greenwood — two others were evidently here during the night shift.

We've been operating all night behind the 2nd Division in this newly pitched Evacuation Hospital which had never seen a battle casualty till forty-eight hours ago and found itself equipped with hospital supplies dating from before the Spanish War — no X-ray — no Dakin's fluid — no nurses, nor desire for any — not a prepared sterile dressing — no sterilizer suitable for field work — and little compressed bundles of ancient gauze and tabloid finger bandages with which to dress the stinking wounds of these poor lads.

But to go back to early yesterday A.M., in the remote past. Colonel Hutton intimated that Fred Murphy must be having his hands full — had not been able to get in touch with him for two days — this new unit sent up in a most chaotic state — completely raw, with new and untried operating teams. Would I go to a place called Crépy-en-Valois south of the Forêt de Compiègne, where I might possibly locate them and be of some service — probably a pretty hot place — an enemy thrust in the side of the salient toward Soissons.

My notes en route read: 'Coulommiers, 7 A.M. — La Ferté-sous-Jouarre — Lizy-sur-Ourcq — up the east side of the Ourcq to Oquerre — Cruoy — Montigny — Mareuil-sur-Ourcq, loaded with French *chasseurs* and their supplies — the clouds breaking — across the Ourcq — along a well-camouflaged road to Auteuil about five kilometres from the recent line — poppies and wheat — wire and gun emplacements — flying men getting out despite the wind — blue patches of sky above, blue patches of chickory in the fields below, blue *poilus* beyond on a distant hillside — batches of Boche prisoners — Ivors — behind the Forêt Villers-Cotterets — "*pour aller à Crépy tournez à droite près Vaumoise*" — funny little camou-

flaged French tanks, all gun, chewing their way along the soft side of the country road — caches of ammunition — a British artillery brigade all freshly shaven and very smart — lorries and lorries till the mud becomes dust — more herds of Boche — at last Crépy, evidently severely bombed of late.'

The hastily manned hospital near the station at Crépy had been hard hit and was evidently impossible and untenable — obviously necessary to evacuate. For this purpose an ambulance train, No. 54 U. S. A., was drawn up alongside the badly smashed-up station — equipped to transport 360 lying cases, it was about to leave with 622 wounded of all kinds, mostly severe. Altogether 2000 casualties had been routed through Crépy with the aid of a few surgeons and dentists from Mobile No. 1. With them were Kerr and Trout, who had just reached France and been pitchforked into this mess to do strange operations under stranger circumstances — put into a car and fired up here not knowing what would be expected of them. They began to take in Thursday afternoon — had 604 last night alone, and they're rather done in.

Meanwhile Proust, the Consultant of the French IVth Army, with Fred Murphy and a Captain Crafts, had been struggling to straighten things out. At the station wounded had been lying out all night in the storm untouched — waiting for the train. Bert Lee in desperation finally wangled some empty lorries and sent a large number of wounded, thoroughly drenched, to this place, a matter of about five kilometres over narrow, torn-up country roads. F. M. said he never imagined anything so appalling — would I beat it to Séry-Magneval and help an untried outfit get started — nothing to do but route all possible cases there — the situation bad and certainly going to get worse — several divisions very hard hit.

Well, I could tell much more both about Crépy and about this awful place — the utter confusion — the appalling number of rotting men for whom no possible relief was in sight; my effort to get some order out of the chaos while the C. O. — the poor man had a bad carbuncle on his neck — disappeared for some hours to get a needed rest; his fury at my having ventured in his absence to number the hastily pitched ward tents — a prompt reconciliation — visits later from Hall, from a very haggard Bert Lee, from Murphy, Allison, Salmon, Bevans, the Corps Surgeon, and many more. Persuaded a Red Cross official to get through by telephone to Paris for a lorry of sterile dressings in tins — more wounded and still more, many of them three days old. E. A. Poe's brother (Nat, I believe) found in one of the crowded tents — Redmond Stewart, a judge advocate, there with him; operations all night in a Bessonneau tent we finally managed to get set up — amputations of the thigh — sucking chest wounds — mutilations — German wounded. I recall a young Seaforth Highlander subaltern and a Jock of the Gordons (the 15th Scottish has come down here to back us up) wounded by the air raiders who passed over near midnight — the only two wounds which I saw that were not stinking.

Well, it was all too awful. Sometime about dawn, while waiting for the next one, I stretched out on the operating table, went promptly to sleep, and fell off. Morning has now come and it all seems very far away. I've had coffee, a shave, and will take a nap — the flies permitting — before we go on again.

I suppose these people have done as well as could be expected — like learning to swim by being thrown in the water after hearing a lecture on how to do it. To add to his sleepless troubles, the poor C. O. has been ill enough to put him to bed any other time. Their

equipment was of an ancient vintage, and they had never opened their boxes. Some of them contained bolo knives, saddles, and bridles, when one wanted sterile gauze! Laid over the supplies in one box, I was told, was a newspaper headlining that Cervera's fleet was expected off New England — but this may have been someone's imagination. . . .

Saturday, August 24th. BESANÇON

Sent with Pearce Bailey (over here on a tour of inspection) to visit Gustave Roussy at Besançon and the Centre Neurologique, etc., la VII^{ème} Région — a most instructive jaunt. Incidentally it took us into the delightful country of the Département Doubs on the edge of the Jura.

In one of our uncertain Nationals, behind Holbrook, we got away from crowded Neuchâteau at nine on a showery morning. Through Langres, the Dijon road as far as Longeau, then left into the Haute-Saône, passing the Maryland people of the 79th at Champlitte, and on to Gray. There we lunched with a medley in a small French restaurant where tame magpies hopped about and regarded you curiously, doubtless wondering whether it was worth while to chance snatching a metal souvenir off your tunic.

Somewhere below Gray we crossed into the Département, doubtless named from the doubling river which winds through it. Then Besançon, the former capital of the Franche-Comté, a place of historic interest in most picturesque surroundings — a fortress of the first class with a citadel perched high on a tongue of land nearly surrounded by the river and with other detached Vauban fortresses scattered about, one of which we were to see.

We were lucky enough to find Roussy, who promptly gave to us the rest of his day. He showed us the general plan of organization and then

took us to the Besançon Hospital, used as a neurological *triage*. After seeing some of the neurosurgical cases there we departed for Salins, some twenty-five kilometres to the south, where the psychoneuroses are sent to be treated. Despite the rain, a wonderful trip across country, with charming views, along deep valleys, of the winding Doubs and its tributaries. Salins itself — a healing salt spring, as its name indicates — is a most fascinating village stringing along, with what foothold it can get, in the crack between two towering heights, each of them surmounted by one of the subsidiary forts of the Besançon cluster. One of these was our objective, and Holbrook, who had already skidded badly in dodging an ambulance when leaving Besançon, looked at the road askance; but up we went, a most wonderful view unfolding before us.

We finally reached the top, where Fort Saint-André, now Station Neurologique No. 42, is one of the centres given over to the psychoneurotics — more particularly those with congealed hands (*les mains figées*) and clubbed feet. These, of course, represent the neuroses which are apt to arise in the case of men with trifling wounds — men whose psyche is not satisfied with the magnitude of their injuries and who fear they may get sent back into the line. Many of these *acro-contractions* and *acro-paralysies*, alas, are attributable to the surgeon — and more particularly to the orthopaedist, if he is not to be called a surgeon. An unnecessarily long period of fixation by dressings is bad enough, but a succeeding period of immobilization in apparatus of some kind for a supposed muscle or nerve injury will do the business. And here they were, men with all imaginable types of fixed deformities — the *main d'accoucheur*, *main en bénitier*, *main en coup de poing* — a most extraordinary collection. Many of the injuries were

two or three years old, the men meanwhile having been nursing their extremities set in the favored posture for all this time, until finally they were drawn into this neurological net.

The whole situation, of course, lent itself admirably to successful therapeutics — just as Lourdes does or Sainte-Anne de Beaupré — a picturesque spot, the expectation of recovery (much as it was dreaded), a room littered and lined with the canes and crutches and braces for backs and arms and legs of those who have marched out presumably cured. Stress is laid, by those in control, on the fact that no neurological examination of any kind is made after admission to this place — only psychotherapy. The detailed physical examination, which necessarily implies to the patient uncertainty of diagnosis, is done elsewhere and by other people — in the sorting station at Besançon or wherever else. Here treatment alone and no questions asked. One can understand how much its success depends on personality by watching Captain Boisseau, Roussy's collaborator, take these self-deformed people in hand and after a brief séance disabuse them of their paralyses — men that had come in that very day permanently crippled, to all appearances.

We climbed the embankment to the old fortress wall for the wonderful view of the valley and town, with the almost sheer hillside below us. Then back to Salins to see in the *caserne* an important last stage of the treatment — the training battalion — the discharged cases from Station No. 42 divided into three groups: those getting ready to go back to the line, those doubtful, and those probably permanently unfit. They were drawn up on parade, the first group fully equipped for service, under command of a crippled captain wearing an apparatus for a musculo-spiral paralysis. As they marched by us Roussy picked out one probable *ré-*

cidive from among the A class. He will doubtless be sent back to Fort Saint-André for three days' solitary confinement followed by another strenuous therapeutic session — one mind struggling to get control of another that has good reason to resist.

Then back to Besançon in a down-pour which flooded the valley, a late supper in Roussy's comfortable billet, and to bed in the last room of the single hotel. . . .

Monday, September 2nd. NEUFCHÂTEAU

Again a perfect day — cool and cloudless. But Neufchâteau is torn up and dust-covered by the incessant passage of transport — everything from lines of *camions* borrowed from the French to processions of clucking motor cycles newly landed and straight from Saint-Nazaire.

The streets of this small place are really astonishing if one stops to squint through the dusty haze. This afternoon, on the road coming into town from our offices, Russians were piling crushed stone in preparation for the steam roller doing its work farther on. A column of French lorries driven by Annamites — very funny in their tin hats — were going west and another column of heavy U. S. A. cars full of troops were coming in, while motor cycles with or without side cars, decrepit Y. M. C. A. and Red Cross flivvers, pedestrians, and an occasional officer on a loaned horse dodged in and out as best they could.

The motor-transport people — our neighbors — were gathering for their supper, mess kit in hand, while a big Caproni bombing plane circled overhead. Farther on a squad of Boche prisoners in their green uniforms — content and well fed, be it said — were being herded to their cage by a single *poilu*. Loitering on the streets were occasional Italians belonging to an aviation squadron hereabouts, samples of our Negro troops, men of the

English Flying Corps stationed just north of here, a smattering of blue *poilus* — a kaleidoscope seen through a cloud of dust.

Preferring cows and a narrow path beside the bad-smelling, swampy Meuse to all this, I cut cross-lots to our billet. The fields are spotted with purple colchicums sticking their blossoms out of the grass as much as to say, 'Don't take me for a crocus and think this is spring.' . . .

Sunday, September 8th. BENOITE VAUX

They are certainly provident people, the French. They are beginning to find out about this in our army — so it was not all British talk, after all. The 2nd Division, hustled into French motor trucks, was thrown into the line west of Château-Thierry. The Marines stuck up their flag and refused to retreat — the Boche was checked and probably Paris saved. On the first of the month our government got a bill for 230,000 francs for the use of the trucks for which we had provided the *essence* — the bill was paid. Whether this is truth or fiction I can't presume to say — rumors which often prove false circulate over here amazingly and facts get distorted in the process. After all, a tendency to drive a close bargain is also a Yankee characteristic, and this war is being fought in France, not New England.

It is Sunday afternoon in Salmon's Field Neurological Hospital No. 1 on the road near Benoite Vaux, a road over which, particularly at night, there is an incessant traffic of lorries and artillery and tanks — predatory creatures which conceal themselves in the wood by day. Imagine a tar-paper hut of rustic French pattern — for this small hospital was once French — perched on the side of a hill at the edge of a beech forest looking down over the cluster of ten or twelve Adrian huts composing the hospital group along-

side the road. This particular abode, with its two cots, measures about twelve by eight feet, and I am to share it with Dexter. Allison and Salmon are close by in another, and innumerable paths wind in and out of the *forêt* rising up on the hill behind us.

While preparing — each of us in his own line — for something soon to happen to the Saint-Mihiel salient, we meanwhile, on getting back here nights when possible, may be regarded as psychiatric patients — all colonels come more or less in that category, anyway. Salmon has pinned over Allison's cot this medical card: —

NAME	N. Allison, K.B.	RANK	Lt. Col.	ORG.	M.C.
NO. ADM.	1				
DIAGNOSIS	Shell shock (severe melancholia with paranoiac tendencies)				
PROGNOSIS	Bad				
TREATMENT	Disciplinary				

A real feeling of autumn in the air, with driving clouds, and before reaching here we passed through a heavy downpour. But the water soaks in fast and the rains help road making.

Yesterday the Allies continued to advance, the Boche showing little resistance. The British reached Beauvois, and the French crossed the Somme Canal. The captured Huns are said to be much depressed, and Hindenburg's power wanes. But the 26th Division is much more interested in the fact that the Cubs beat the Sox in the second game of the series. 'Boy Howde!'

Monday, September 9th

It's interesting that eight out of the first ten patients admitted to this hospital have come in with widely dilated pupils and in an hallucinatory state, some of them actively excited. One of them this morning was clear-headed enough to recall that in addition to some blackberries he had eaten about five large round berries, big as cherries,

which grew on a bush four or five feet high, and they left his mouth puckery. So Dexter and I struck off into the woods this afternoon on a botanizing expedition — and incidentally to find a short cut over the hill and through the *forêt* to his forward Gas Hospital at Rambluzin. An incomparable beech forest with only an occasional mountain ash and white oak, carpeted with delicate wood ivy and blue Canterbury bells in profusion. There were innumerable crisscrossing paths which were dry despite the downpour this morning, but which were also confusing, and, having no compass, we got well lost. Most of the woods hereabouts are jam-packed with troops, but we saw not a human being — not even a lumberjack, though there were plenty of recently felled trees trimmed and ready to go to the mill at Benoitte Vaux.

We finally brought up after about two hours on the top of a hill where the ground was badly torn up and the trees all dead within a circle of some one hundred yards across. The place was guarded by a single barbed-wire strand fastened to the trees, and within were eight huge perfectly formed craters about thirty feet across and thirty feet deep. We ventured under the wire and found the ground strewn with rusty Mill's hand grenades, almost all of them exploded. I picked up from the rubble a perfectly formed fossil bivalve which had been blown up out of the chalk — also a fossilized mandible, ape-like in form. The trees above a six-foot level had been so completely riddled they had died — certainly a year or two ago. What is the explanation?

From this place we took another path, and, as luck would have it, soon came to a Chasseur Alpin sitting on a log. He pointed the way to Rambluzin and casually remarked that the branches with the big black berries we had in our hands were poison — belladonna, as every Frenchman knew.

There was only one variety, he was sure. Our quest was satisfied, and not three hundred yards away we came to the edge of the woods and found ourselves looking down on the huts of Dexter's Gas Hospital.

Wednesday, September 11th. 9 P.M.

Sam is as black as the ace of spades and says if he can only 'get one foot on de aidge of the U-nited States he'll sure quick find his way back to Columbia, South Ca'lina — jes' one foot, yaas sah!' He's been sent in here as simple-minded (probably by some Yank M. O. in the 92nd Division), whereas he's just nigger. You should hear Cannady, a Virginian, draw him out regarding his experiences in the trenches.

'Sam, what did the regimental doctor ask you?'

'Oh, he done ask me who's de captain ob de U-nited States.'

'What did you say?'

'Oh, I done said *Washington*, he's de captain ob de U-nited States, an' *Paris*, he's de captain ob France, an' *Berlin* he's de captain ob Germany — yaas sah!'

'Sam, who are we fighting against in this war?'

Sam, hesitatingly: 'Why, we's fightin' de Germans.'

'Who else, Sam?'

'We's fightin' de Australians, too — yaas sah.'

Sam is good at finding bits of wood and we again have a fire in Salmon's leaky hut to-night, hoping to dry our things out, for the rain has kept up most all day.

Sunday afternoon, September 15th

So much has happened since Wednesday night, when, unaware of its imminence, we were fretting over the delay in the offensive, that I can hardly set it all down. The French generously give our troops the credit: '*L'attaque améri-*

caine dans la région de St.-Mihiel, and so forth. Luck is certainly with us. We are like a pinch hitter sitting breathless on third at the end of the ninth inning, having cleared the bases with a three-bagger — the benches scream with joy.

Thursday opened raw, cold, and rainy. There had been distant gunfire during the night, but the strong westerly wind and storm had completely muffled it from us. Salmon unhappily had ventured to go down to Neufchâteau, where 'the offices' had grabbed Sullivan and our pilfered Dodge car and we were legless in consequence. But during breakfast the good Lord sent out of the rain a flivver containing Cannon, Yates, and Middleton, who dropped Dexter at his Poison-Gas Station and carried Allison and me over to Souilly. There, to our astonishment, Garcia, who is G 4 under Colonel Stark in this area, tells us the show has opened.

Dropping Allison at his splint dump, which grows apace, we went on to No. 1 Mobile at La Morlette. There, about 11 A.M., McCrae and his officers, unaware of what was going on, were found sitting at a practice conference while the first ambulance of wounded actually stood unannounced at the Admission Hut. Thence Cannon and I hustled to the F. H. 101 *triage* at Génicourt, expecting to find an overcrowded and busy place full of wounded, 'shocked' from cold, wet, and exposure. But no such thing. A mere handful were dribbling through, and Captain Taylor had them well in hand. Thence on to Rupt, the headquarters of the 26th, to see the Divisional Surgeon, but he was away and we learned that the attack had opened with a heavy barrage at 2 A.M. which kept up till five; that the boys had gone over at daybreak; that so far very few wounded had come through; that General Edwards's billet was just around the corner.

Hyatt, at the headquarters, insisted on our going up to the Divisional P. C. on the side of the hill just east of the town, — the Bois des Trois Monts, I believe, — and there we should find the General in one of the dugouts. We did, and passed a most exhilarating hour — like listening to election returns when things are going one's way. The place was full not only of the General, but of maps and telephones and aides and liaison officers and messengers coming and going — Peter Bowditch; Captain Simpson, the A. D. C.; Major Pendleton; Colonel Alfonti; Captain Malick, formerly Joffre's A. D. C., and a lot more. The advance on the whole was going well, — St.-Remy and Dommartin-le-Montagne, — but somewhere the line was being held up by a machine-gun nest and C. E. was greatly exercised and characteristically profane.

In the midst of all this someone came in and said thousands of prisoners were coming in. The General looked skeptical, remarking that the number of prisoners always dwindled, or else about half of them got away. Still, we went out and stood on the slippery duckboards commanding a view along the valley where masses of prisoners were being herded down the road. Soon word came from somewhere that a whole battalion had been captured with its officers, a medical officer among them.

'That means a job for you after lunch,' said C. E. 'Find out if Hindenburg is in Metz; where their artillery is; what divisions there are — anything you can.' He held us to this, and after a brief lunch in his billet Cannon and I were left over our coffee to interrogate the young M. O. whom Captain Horsman, the Divisional G 2, soon showed in. We gave him food and pumped him in a language somewhat halting from disuse, and he gladly gave forth what he knew. . . .

My impression of these last few days is that the enemy made an extraordi-

narily good getaway probably Tuesday and Wednesday nights, though they must have regretted giving up the quiet salient they had held since 1914 and in which they had thoroughly and comfortably dug themselves in. On its western side the 26th was flanked by the French, and though everything went smoothly enough there's no telling what would have happened had they met serious opposition with heavy casualties. Our Medical Corps has yet to see over a large sector the effects of stubborn resistance by picked troops such as we grew all too familiar with in last autumn's battles at Passchendaele. It will surely come — perhaps south of the Argonne, where we must next lay plans. Meanwhile we gain experience.

Tuesday, September 24th. 9 P.M. FLEURY

We find ourselves in a little wooden barrack belonging to R. C. Hospital 114 — all our own with a cubicle apiece, a stove in the hallway, and actually sheets on the cots!

Wednesday, September 25th

After a cold night with incessant rumble of lorries down the Wally road just behind us, we had the usual A.M. mix-up about the disposition of our decrepit Dodge — Salmon, Finney, Allison, Dexter, and I all needing to go in different directions. Learn at Souilly that a message from Colonel Tuttle states Mobile No. 6 ordered to Deuxnouds — 'Doughnuts,' in soldier parlance — without waiting for completion of equipment and organization. So we beat it there, leaving Captain Harvey to make an inventory of the things the French are to leave — none too soon, for they were packing up everything, even to the stationary engine. Untidy, but not an unpromising place — chief features a good market garden (already sold by the outgoing French to a native of the village, who will sell it back to us for 200 per cent

profit); four good wards of thirty beds each; a pile of coal, with some wood; a hillside where Towne can pitch his Bessonneau tents; and lastly a cache of *essence*. Only serious drawback that water must be carted from the spring at the entrance to the grounds.

Back to Souilly, where Garcia takes me to see Mlle. de Beye, the 'Angel of Verdun.' She very cordial — may have anything in her stores. Salmon promises ten of his nurses, and Marshall Clinton will help arrange about teams. Our calculations for the eight divisions, with six in reserve, are 14,000 casualties — that is, 6 per cent of total engaged — if there is serious resistance, as there is almost certain to be; of these, 3000 dead and 11,000 wounded, of which we may expect 10 per cent to have head wounds.

September 26th. 9 P.M.

The initial barrage opened about midnight and continued till six. A cold, misty-clear morning. Finney and Allison to the divisional *triages*. Salmon and Dexter off in the Dodge. I, in a decrepit flivver wangled from Mobile No. 5, in chase of Towne's outfit, which is lost somewhere and must be ready to 'take in' to-morrow. With a carpenter and sign painter borrowed at Fleury and a pot of stolen red paint, get some 36-by-8-inch sign-boards to nail up routing ambulances with head cases to Deuxnouds — over side roads not easy to find. . . .

September 28th. 10 P.M.

General Brewster, the Inspector General of the Army, has blown in and asked for a bed. He gets Salmon's and remarks that he's more afraid of that man than anyone in the army. He has been all over the front — the IIIrd Corps up to Briulles-sur-Meuse; from there the line drops well back to Cierges, whence our troops have had to withdraw. On the left the conditions

are better. There is a very stiff resistance — machine guns — the roads are impassable except on foot or horseback, and one of the main roads is blocked by a mine hole and a stalled French tank. A lot of wounded can't be got back. It's set in to a steady downpour.

11 P.M. — Colonel Beuwkes in to see the General — dripping wet — just back from Béthincourt. The road from there to Esnes impassably blocked — was nearly ten hours in going as many kilometres; cars ditched everywhere — artillery, food, and ammunition trying to get up, empties and others with wounded trying to get down; some fools had double-banked; no lights permitted, even smoking prohibited — a hard regulation to live up to a night like this. . . .

[Dr. Cushing, crippled by a polyneuritis, had been persuaded by Major Schwab, on October 18, to lay up for a temporary rest in his quarters at Base Hospital No. 117, of which he was in charge. What history tells us about war concerns the mass movement of troops, and the victories, or otherwise, of this or that general in command. What meanwhile has happened to the individual foot soldier or his company officers rarely gets recorded. Such a tale follows.]

Wednesday, October 30. PRIEZ LA FAUCHE

Some days ago Schwab brought in a young officer to be interviewed. I have heard him stuttering around the hallway — stuttering both as to gait and as to voice. Here is his story. It has come out bit by bit in the course of several conversations — its fragments told in a most impersonal manner without a vestige of self-consciousness.

Captain B. of the 47th Infantry was admitted here September 11, 1918, with a sealed letter from B. H. No. 3 stating that from reports he was one of

the best of the younger types of officers — brave and resourceful; also that he was blind when admitted to No. 3 and had very marked motor inhibition. Here for six weeks, with the diagnosis of 'psychoneurosis in line of duty,' he has improved steadily, but still stammers considerably and walks with a peculiar muscle-bound gait; has worked very hard to overcome this and is eager to get back to his regiment.

A clean-cut, fair-haired young fellow, twenty-four years of age, below medium height, and with the build of a football tackle. German parentage and exemplary habits — no tobacco or alcohol. Was very pro-German before the war, and in consequence has always felt that he had doubly to make good.

The Division sailed May 11, 1918, to Brest, and his regiment was billeted at Samer, some of the officers, three from each battalion, being sent to the British front for instruction. He saw a good deal of fighting during the retreat and for nine days was constantly under fire — a very confusing time, with the British morale low. Felt terribly green, but tried to keep his eyes open and learn what he could.

Rejoined his regiment and was put in charge of a group of officers who were apportioned to our 2nd Division for experience. Was with them from June 5 to July 9, in the 23rd Infantry — Colonel Malone's outfit. Between June 6 and 10 came the taking of Bouresches and next the Belleau Wood affair by the Marines, supported by the 23rd. It was point-blank fighting, as hot as anything could be for a green man, and some places like Lucy were thick with dead. Still they got through, though the casualties were high; one battalion, for example, lost 75 per cent of its men when going through an exposed wheat field. Things were fairly quiet until July 1, when the 3rd Battalion of the 23rd and the 1st Battalion of the 9th took the village of Vaux — a very suc-

cessful attack, but there were no reserves, and, had the enemy only known, they could have walked through.

Then a couple of quiet days, when the French on the right of the 9th Infantry went over, and, being a reserve liaison officer, he went with them — a fine advance, getting their objective, Hill 204, but they were driven back by a vigorous counter attack, in which *mêlée* everyone had to take a hand with machine guns and rifles, observers and all. The French had to retreat even behind their former positions, with heavy losses.

On the ninth of July they were relieved by the 102nd (26th Division) and B. rejoined his own unit, the 47th, in reserve near La Ferté-Milon, which the French were holding. It being supposedly a quiet sector, a lot of officers were loaned to the French for experience and observation. Here he learned what a real barrage might be, for between July 10 and 14 the enemy made a thrust at La Ferté, with heavy shelling. The French, about ready to quit, would only say, '*Beaucoup de Boches* — *beaucoup de Boches*.' They dropped behind the barrage, while the attached Americans — company commanders, platoon leaders, and so forth — went forward, got separated, and had heavy losses. Everyone was dumbfounded — some few French went forward with the Americans. In half an hour the French came back — pistol, rifle, and bayonet.

It was a brief episode, and after two days he again rejoined his regiment, which had moved up to La Ferté. The 4th Division (the 58th, 59th, 39th, and 47th Regiments) had been stationed in a reserve line along the Ourcq from Crouy to Marchiel, and on the morning of July 14 the 39th and 58th attacked at Chézy, B. going with them, the 58th on the right so badly hit that the 59th leapfrogged them — an unsuccessful affair in which the 47th took

no part. The next day the Boche offensive opened. B. was recalled to La Ferté and the division had no part in Foch's counter until the end of the first week. Meanwhile, being in charge of the wireless, he knew pretty much what was going on.

On July 25 or 26, he is not quite sure which, his regiment, being fresh and having had no part in the Chézy affair, was sent as shock troops — hustled in trucks through the other formations, first to bolster up the French at Grisolles and La Charme. From there they were rushed forward where the advance had met its chief stumblingblock — Seringes, Sergy, and Cierges. They were all night in going up, made their way through the Forêt de Fère, which was full of gas, and to the open fields beyond. Here the 42nd was holding the line, the Alabamans (167th) to the left and the Iowans (168th) to the right. The 47th was to go in between them toward Seringes and Sergy, but being then only a junior officer, — a lieutenant, — he knew nothing of the plan.

They were just too late in getting through the woods to follow the barrage which had been put up for the attack, and had to go it unprotected in double time to catch up to the 168th and 167th, who had already moved forward. No sooner had they emerged into the open than they met a heavy fire. The lieutenant colonel and one major were severely wounded, and soon the other major and B.'s captain were killed, leaving him senior officer of his battalion.

About this time a general appeared from somewhere and asked B. if he had received any orders, which he had n't, and with a wave of his arm the general said, 'You're to cross a river over there and take a town called Sergy.' It was tough work — the men had marched all night — they formed combat groups and went through wheat waist-high under direct fire

from the Boche artillery. They carried one day's ration, one hundred rounds of rifle and one bag of *chochant* (automatic) ammunition. In some unaccountable way, Company L had received an order to withdraw, leaving what remained of three full companies, *circa* 700 men. The Ourcq, which proved to be a mere creek, they crossed with a run and jump, and, getting into Sergy, they fought their way through it by 10 A.M., finally being brought to a halt beyond the village at a sunken road which was filled with machine guns.

There was terrific shell fire, both our own and the enemy's, which seemed to be concentrated on Sergy, and finally, after heavy casualties, they had to fall back as far as the Ourcq again. Here they established not only their battalion P. C., but a first-aid station in a battered mill (La Grange au Pont), and did what they could for such of their wounded as they could drag in. Later in the day, after heavy artillery firing, the enemy countered. The dwindling battalion met them in the village and drove them out as far as the road again. The Boche came back with reinforcements, and all night there was house-to-house fighting in the village — the boys standing it very well despite their fatigue and losses.

On the next day, with no artillery aid, they succeeded in getting the village again cleared back to the road and held the Boche there till dark. Then the Boche countered once more and drove them back to the mill, where they again held and spent the whole night in once more clearing the village, which they succeeded in doing by dawn. That day the Boche came back at noon and reached the mill — and so it went, back and forth, the place changing hands nine times between Friday the twenty-sixth and Tuesday the thirtieth, the twenty-eighth being their worst day. They finally held at

the road on the thirtieth and were relieved on Wednesday the first.

Practically without sleep, with no medical officer, with only such food, after the first day, as they could get off the dead, with almost incessant shelling and many hours of actual combat every day, it was something of a strain. On Tuesday night B. got over to the 168th, and the colonel wanted an estimate of his strength in view of a possible widespread attack: '18 men and one officer fit for duty' — out of 927 men and 23 officers, these alone were left.

B. admits that he was getting rather fed up. He was acting as gas officer, for many of the men were suffering from bad burns and all had been more or less gassed. Then as intelligence officer — in other words, as a runner, once or twice by day and two or three times by night, always in the open — a necessity, since lines that he got over to the 168th were soon blown to bits and there was no one at the 168th P. C. who could read flash messages; there was no communication at any time with the rear. Also as medical officer, directing the getting in of the wounded, always under fire, back to the mill; he did two leg amputations himself with a mess-kit knife and an old saw found in the mill. One night they had sent back 83 wounded men on improvised litters.

When sufficiently quiet, the nights had to be spent in searching their own and the enemy's dead for food and ammunition. They once got down to as low as twenty rounds of cartridges, and much of the time they used Boche rifles and ammunition — also Boche 'potato-masher' hand grenades, which caused at first a good many casualties among the men, for they were timed at three or four seconds instead of four or five like ours. The Boche food was good when they could find it — sausages and bread and Argentine 'bully.'

The least fatigued men had to be

used to get in the wounded, for it was an exhausting process, since they often had to be dragged along a foot or two at a time, as occasion offered. Many men with three or four wounds continued in the fight — had to, in fact — and a sound man and a wounded man often fought together, the latter loading an extra gun even when he might not be able to stand. Their only protection was to get in shell holes.

During these days B. saw for the first time a case of 'shell shock,' though he did not know what was the matter with the man — thought he was yellow. Every time a shell would land near, he would race to shelter, shaking and trembling; but he always came back and got to work. He simply could n't stand the shell explosions. They were all pretty shaky from the almost constant artillery fire — high explosive alternating with gas of one kind or another. Many of the men still fighting had mustard burns. But almost the worst was a 'rotten-pears' gas which made them sneeze and often vomit in their masks, so they had to throw them away and take a chance. Everyone was more or less affected, and marksmanship was poor from lachrymation.

On Monday, B. was quite badly stunned by a high-explosive fragment which struck his helmet — like getting hit in the temple by a pitched baseball. Men often thought they were wounded — would feel a blow on the leg, perhaps, and see blood and a tear, but on slipping off their trousers would find only a bruise, the blood having come from a neighbor's wound.

On Tuesday afternoon the Boche sent over a terrific barrage — a combination of artillery and machine-gun fire. They had learned by this time that after a barrage the only thing to do was 'to beat the Boche to it' — so he and Lieutenant K. with their eighteen men rushed them (there were

some two hundred Boches) and succeeded, after a sharp engagement, in getting into their positions along the sunken road just north of the village. It was a case of '*Gott mit uns*,' for not one of the eighteen was killed. They captured some machine guns, and, getting them in favorable positions, held the enemy off.

Not long after, word came by runner from the 168th to hold on, for they were soon to be relieved. B. sent back word that they could n't hold much longer, and fifty men were sent over from the 168th in support. At about 2 A.M., B. and two men with *chochants* and grenades crawled out and put out of commission an Austrian 88 which had been trained on them and from which they had suffered much. They captured the crew and officers. It was the last post holding the sector. The Boche had evidently begun to withdraw.

About this time Seringes was taken by the 1st Battalion of the 47th on their left. They had probably gone through similar experiences, but apparently Sergy had been the most difficult nut to crack. Cierges had not yet fallen.

Wednesday, a day of intermittent firing, was spent in collecting the wounded. They were relieved at sundown — two officers and eighteen men — and they marched all night to get back, all very much done in. Lieutenant K. had been hit through the heel — was cursing and swearing, and quite out of his head. The men all appeared low indeed — one chap, Madden by name, had had no sleep the whole time, for he had been acting as runner on the left, three or four times every day under observation and fire.

They went through the Forêt de Fère and met the chow wagons about noon — found a new acting colonel who knew precisely what to do; gave the men good food and made them go

to sleep. Not until they had arrived did B. notice that he was shy of his tunic, in the pocket of which was his artillery code — had left it under the head of one of the men who was badly hurt and forgot it when the time came for them to go out. Insisted on going back after having a rest — was afraid someone would find it. Was given a motor cycle and to his great relief found the coat where he had put it, but the man was dead.

On coming out he saw one of his own men who had been wounded and was overlooked near the mill at the far edge of the creek. He went down and tried to get him across the creek to the motor cycle, but the Boche opened up and they could not duck fast enough. B. felt a heavy blow on the top of his helmet, which mashed it in against the back of his head. He fell forward — had a sick feeling — found he was bleeding from the mouth and nose, and the back of his neck was bloody. Started to look for the man and found him all cut up with a huge hole in his side and a glassy stare, so he knew he was a goner and left him — reached the cycle and started off under heavy fire.

As soon as he got back they saw something was the matter and gave him a stiff drink of whiskey — he tried to sit down, but came down heavily with a jar, and began to shake and stammer. He was afraid to go to sleep, as he had an idea he would be unable to see when he woke up. They threw cold water on him, and he felt that his entire left side had given way and all vision was gone except a yellow fog in front of him. Through all this he still had a feeling that he was O.K. — merely exhausted and needed sleep. He was very sick, vomiting more or less all the rest of the day — ears humming — everything swimming.

They wanted him to go to a hospital, but he remembers fighting them much as a football player sometimes does

when he is forced to leave the field after an injury; has strangely vivid memories of this occurrence and subsequent events — very patchy, though very acute memory pictures. Knew by the hum of the machine that it was a G. M. C. ambulance; could n't see much except a yellow cloud before his eyes; was taken to a field hospital and a doctor asked him what was the matter. He said nothing, he merely wanted a little rest; was talking well enough at the time.

First in a horse-drawn wagon, then in a Ford ambulance, a very rough ride, to No. 7 at Coulommiers, a matter of a good many hours — does not know whether he was alone or not. Terrific headache all the time. His hearing was getting bad — a constant hum in his right ear; when the machine would hit branches of trees it sounded to him like the whish of a shell — the worst sounds he had ever heard. . . .

'Of course if they had known we were so weak they could have come through at any time. You see, I am now Senior Company Commander and I want to get back because I can have the pick of the companies and can get into some really big push before it's all over.

'The chief trouble now is the dreams — not exactly dreams, either, but right in the middle of an ordinary conversation the face of a Boche that I have bayoneted, with its horrible gurgle and grimace, comes sharply into view, or I see the man whose head one of our boys took off by a blow on the back of his neck with a bolo knife and the blood spurted high in the air before the body fell. And the horrible smells! You know I can hardly see meat come on the table, and the butcher's shop just under our window here is terribly distressing, but I'm trying every day to get more used to it. Yes, it was unpleasant amputating those men's legs, and we had to

sharpen a knife from a man's kit for it, but what could one do otherwise? It was not quite so bad as dragging the wounded men in, hunching along foot by foot, both of us on our backs and under direct fire all the time — that was interminable. But the worst of all are the dying faces that come to me of the men of the command — the men I could not bear to see die — men whose letters I had censored, so I knew all about them and their homes and worries and dependents.' . . .

Wednesday, November 6, 1918

It was a year ago to-day that the last attack was made for a few yards more on the Passchendaele ridge, leaving a British army discouraged and decimated after three months of desperate fighting, with gains so slight it was not even necessary to move the casualty hospitals forward. To-day what a different story! The British on one side of the Ardennes have gone through the Forêt de Mormal and progressed along the Sambre toward Mauberge and Mons. On the other side, the Americans have finally broken through in the direction of Stenay on the Mézières-Metz line. Between these pincers the enemy may get trapped, and a second Sedan be the result, unless they can manage somehow to extricate themselves. It hardly seems possible that these are the same people who a short fourteen weeks ago were sweeping victoriously toward Paris and Amiens and the Channel Ports.

Monday, November 11th

The Great War ends at the eleventh hour on this eleventh day of the eleventh month of 1918. So the Kaiser awakes from his forty years' dream of world dominion. It's a piteous spectacle. All the king's horses and all the king's men could n't put

Humpty Dumpty together again. He came so very near to fulfilling his ambition — the Hohenzollern rule of a Prussianized world. *Weltmacht oder Niedergang*. He gambled and lost, so it is to be downfall.

The past few days have been comparable to the last few minutes of a decisive intercollegiate football game at the end of a season. On one side of the field, alive with color and excitement, an exultant crowd, — touched by the last rays of a November sun, — an unexpected victory within their grasp through an unlooked-for collapse of the visiting team. Across, on the other side of the darkening field, tense, colorless, shivering, and still, sit the defeated, watching their opponents roll up goal after goal as they smash through an ever-weakening line that shortly before seemed impregnable.

Just so, till the whistle blew, the Allies plunged ahead on the five-yard line of the Western Front. The Americans pushed over at Sedan — a mass play carried the French beyond the Mézières-Hirson line — and the British Guards Division on the left centre went through to Mauberge and Mons, where early in the game they so desperately and hopelessly resisted an apparently unconquerable foe. Surely the Bowmen of Agincourt, the Angel of Mons, and Saint George himself must have appeared yesterday, even as they are said to have appeared in those tragic days of August 1914.

It's a trivial comparison, — a world war and a football game, — but when something is so colossal as to transcend comprehension we must reduce it to the simple terms of familiar things. 'The world has been made safe for democracy.' Now we shall see what democracy can make of it — and there's much making to be done.

(The End)

THE CONTRIBUTORS' CLUB

MISS MOLLY H'YAR

MISS MOLLY H'YAR
Give a hop an' a rush
An' squeeze herse'f under
De chinkypin bush.

She set moughty small,
An' she set moughty still,
Kase a boy wid a dawg
Steppin' over de hill.

De boy got a gun,
He a powerful shot,
An' he itchin' for h'yars
To bile in his pot.

Miss Molly H'yar
She start sich a quakin'
Dat she set all de leaves
To shiv'in' an' shakin',

She make sich a trimble
Dat de twigs all jump,
An' de ol' houn' clamp down
His tail on his rump,

An' de boy give a screech
An' take to de brush —
Gawd, dar's a hant
In de chinkypin bush!

Miss Molly set
An' see 'em a-lopin',
She laugh so hard
Dat she nigh bus' open,

She shake so hard,
All squush on de groun',
Dat de chinkypin nuts
Come a-hailin' down.

Dey crack on her haid,
An' dey crack on her back,
But she flat out her yeahs
An' let 'em crack.

Chk! Chk! Chk!
Got a b'ar-size gun,
An' skeered ob a cottontail —
Run, nigger, run!

OL' MARSE OWL

OL' MARSE OWL set up in a tree,
An' he talk all night moughty proud an'
free.

He holler de whippoorwill smack off de rail,
He skeer de ol' houn'
Till he tuck in his tail.

Whooooo youoooo?
De whole night th'oo
Widout any stoppin',
Like ev'ybody deaf,
Till I git so hoppin'
Dat I holler back, *Hyere,*
Who you, yo'se'f?

Ol' Marse Owl set a-snorin' all day,
Night time, he tune up an' act dis-a-way,
A-hollerin' an' a-whoopin', an' de bigger de
moon

De mo' he sing out dat plague-gone tune —

Whooooo youoooo?
De plum' night th'oo,
Jes' to be rilin'.
So I sass back like dis,
Kase I jes' plain bilin' —
When I git you by de tail, suh,
You'll know who I is!

NANCY BYRD TURNER

WHAT A SMALL BOY KNOWS

SOMETIMES, when I am out reading on the porch, Edgar and Frank and Walter come over to chat with me. Edgar and Frank are brothers who admit to the ages of eleven and nine respectively. Walter is apparently somewhere around there. All three of them live near by. When they see me, Walter says: 'Hi, Parke.' Then Edgar says it, then Frank. I am pretty well used to it by now, but I should still prefer to have them say it simultaneously, because each of them expects a return acknowledgment on my part. I'd prefer to lump them into one good 'Hi.'

Lately I have taken to questioning them the moment I see them. The reason for

this, of course, is that if I don't, they question me. Generally speaking, I'm fonder of asking questions than of answering them. Here is what I have been able to discover to date: —

They have heard of Mussolini and Hitler, and can identify neither. All three of them are dead certain that Franklin D. Roosevelt is the President of the United States. Edgar knew that the answer to 'What makes more noise than a pig under a fence?' is 'Two pigs,' but the other two did n't.

They know that Babe Ruth is a ball player who hits home runs, but are not certain whether he plays for Harvard or Yale. They have not heard of Lou Gehrig, Carl Hubbell, Jimmie Foxx, Ty Cobb, or any other ball player past or present, so far as I can determine. They know that Washington is the capital of the United States, but when I asked for the capital of Germany, Walter was the only one who vouchsafed an answer. He said, 'France.' Walter has been in school longer, I think.

They cannot identify Bill Tilden or Bobby Jones or any other tennis player or golfer, but they know who Jack Dempsey, Max Schmeling, and Primo Carnera are. They also know that Carnera had no clothes on in his last fight — he fought Baer. Edgar and Walter know that nine nines are eighty-one, but not what 50 per cent of ten comes to. They know that in 1492 Columbus discovered America.

When I asked them what Abraham Lincoln was famous for, Edgar, after some hesitation, said: 'One day he walked three miles because he had given someone the wrong change.' They correctly identified Dillinger, and went so far as to qualify him as 'the worst bad man there ever was.' Jesse James meant nothing to them, however. Frank was of the impression that Robinson Crusoe was a bad man who liked to help the poor people. He admitted that he meant Robin Hood.

Movie and radio stars seemed pitifully easy for all three contestants, who identified such actual and fictitious personages as Mae West, Paul Whiteman, Wallace Beery, Amos 'n' Andy, Greta Garbo, Ed Wynn, Rudy Vallee, Mickey Mouse, Floyd Gibbons, Charlie Chaplin, Marlene Dietrich, Joan Crawford, Jimmy Durante, and

Tarzan. They knew that Johnny Weismuller has played the rôle of Tarzan, and that he was a swimmer before he went into the movies.

However, there was an unmistakable tendency to attribute screen and radio careers to a number of celebrities in other fields. Joan of Arc, thought Walter, is a movie actress, and Shakespeare is on the radio. He identified Henry Wadsworth Longfellow as a poet, but I failed to discover any other author who means anything to him. Edgar Rice Burroughs, Eddie Guest, and Charles Dickens, for instance, don't. Gandhi, according to Frank, is in the movies.

Lindbergh, of course, was apple pie, and so were Henry Ford and Thomas Edison. Sherlock Holmes and Captain Kidd drew blanks, the only guess being that the Captain and the Kids are a comic strip. Mutt and Jeff, Joe Palooka, and the few other comic-strip characters I was able to think of caused none of them any trouble. I am at a loss to explain, however, why Edgar thinks that the Prince of Wales 'lives in the sea,' or why Walter puts the Pope down as a flower.

General Pershing, J. P. Morgan, Red Grange, Al Smith, and Paavo Nurmi have apparently done nothing to cause any stir, but Washington, Coolidge, and Hoover have all been Presidents, and Albie Booth was a football player — the only one they have heard of.

John D. Rockefeller is by all odds the most versatile world figure today. According to Edgar he is a ball player, and according to Frank he has a church on Riverside Drive. Walter maintains that he is a famous bad man.

PRAYER FROM NUMBER EIGHT

MY favorite bedroom in the Club is Number Eight. I do not know why this is so, unless perhaps you include the fact that in seven years of occasional transiency I have slept there in only one other. I was sick with a fever first in Number Eight. One does n't often revisit with pleasure the spots where one has been sick. But I bear no grudge in this case. It was congenial to me then, and is to-night when I am quite well and writing

this essay because I drank too much coffee for dinner.

In the first place, Number Eight is blessed by situation. It has a cheering outlook. From the fourth floor you gaze directly into the fourth floor of the Ritz. If there is nothing instructive going on in the fourth floor, then you gaze into the fifth. And so on to the fourteenth, which tells you practically nothing that you want to know. The idea that the fourth or some other floor of the Ritz may be gazing at me is of indifferent concern. I have nothing to show them beyond a reading lamp at night and a bearded face in the morning. Let them speculate. I am one window against a hundred.

But the view out is the smallest fraction of the charm of Number Eight. It is the querness and the comfort within that I desire. Two doors separate me from my kind. They swing on nearly identical hinges. One of them offers hermetical sealing, the other the resembling freemasonry of a saloon. From under and over the latter come the faintly audible sounds of Club life; and indeed, as I lie in bed and glance casually toward the hall, a number of strange, listless feet go by, or bald heads float past the top like the rolling of gigantic eggs in some Gargantuan race.

I have escaped, I say. It is still only ten o'clock. Smoke, argument, drink, food, games, life, and boredom lie below me on another floor, and I have only this broken sound of occasional people retreating from them. Interruption has stalked off to sleep, and I lie here humbly, gathering a little strength to meet him in the morning. I bless this quiet place and the man who laid thick carpets in the hall. I bless the servant who hung the white Club bathrobe in the closet, and the Chinaman or Malay who invented the clean straw sandals beside my bed. I bless the Art Committee who fixed two etchings and a water color on the walls, and the artists who made them and gave them to the Club. I bless their separate talents and hope that they have since improved. I bless the genius who kept the telephone from my room and a radio from this floor, and the modest electrician who installed but the simplest circuit of an electric bell. I bless the fact that even that won't work.

I bless the street which is far enough down to be remote yet visible. I bless the sound of my city, reduced here to the fleeting murmur of another planet. I bless the fair rectangle of sky which I can just see without falling from the window, and the one or two stars in it that are granted to my coffee-wakened eyes. I bless the blue Club stationery on my table, and the many long and overdue letters which I shall not write. I bless the occult nearness of friends and the factual remoteness of creditors. I bless the strength of that caffeine and the patience I have to write this essay.

I bless the books which I had the forethought to bear in with me, and the generous failure of the House Committee to provide a shelf of others I should not want. I bless an anthology of poems which brings me, without charge whatever, the sound of the sea, the wine of autumn, the fall of leaves, tears I am not obliged to shed, wind in the western grasses, and the imaginations of other men. I bless by Chesterton a book of heretical statement, and some of his lies and the best of his many half-truths. I bless the man who wrote this mystery which I cannot possibly solve, and his unexpected wit which is rare enough in all hasty writing. I bless unopened one red volume which has been neither recommended to me by a critic nor sent me by the publisher. I bless whatever charm it may possess, and the hopeful excitement wherein I shall presently begin it. I do not bless this sudden crick in my back.

I bless my pipe and a good supply of matches. I bless the blue smoke of tobacco which I keep out of my bedroom at home but which in Number Eight is a necessary and comforting part of the atmosphere. I bless my black shell briar and the whiteness of ringed ash in its bowl. I bless all difference to me and my indifference to the world.

I bless my watch and the ticking of its mechanism, sparsely jeweled. I bless the present hour and the hours that lie between me and the dawn. I bless my bed and the extraordinary fact that none shall call me from it.

These, then, are all my blessings, and to them I add one more: I bless the magazine that prints my quiet words.

FRESHMAN FLIGHTS

STIMULATING the ink glands of the human squid has its compensations. . . .

The sophomore, in his struggles with literature, attains at times a weird felicity of expression. He may christen titles anew, referring, perhaps, to Browning's 'A Staccato of Galuppy,' or Lovelace's 'To Crustacea, on Going to the Wars,' or even Shakespeare's 'Venus and Adenoids.' He may speak of Spenser as 'an inventor of anarchisms in the language'; he may inform you that 'Charles I tried to rule by the grace of God which never works very well,' or that 'Sir Philip Sidney lost his life in the Netherlands at the Defense of Poësie.' And after all, one easily confuses *legends* and *legions*: 'The Arthurian legends lived in little towns surrounded by high walls. They never knew when they would get any sleep because they might be called in the middle of the night.'

But it is the freshman who really rises and shines. He refers (at least mine do) to 'religious phonetics,' and 'blood-curling stories,' and 'brunet or light-headed instructors'; to 'a cow chewing its quid,' to the traffic 'going pro and con.' He tells you that 'youth is the embodiment of virulent manhood,' that 'my friend was in a dislocated state of mind,' that 'James was full of enthusiasm to the brink,' that 'I was infuriated to the point of exasperation.' He inveighs against cowards, 'who lack the sand which will keep their wheels from slipping on the rails of life.' Or his Puritanism may drive him to exclaim, with biting sarcasm, 'I hate to see a student walking down the street with a big black cigar in his mouth or a professor.' You ask for exposition and he writes, 'In shaving, a person should first proceed with a downward stroke from ear to ear and go down to the bone of the throat and after this process he should do likewise with the other side of his face.' You ask for narration and his theme begins, 'My suit which had been cleaned three days before was hanging in my closet wherein lay my Waterloo.' You ask for description and he tells you that the boy's face 'is covered with good-natured freckles,' or, of a man, that 'with the exception of his steel gray eyes, his long hair and pointed whiskers covered his features.' Or he writes,

'Mrs. Buford's haughty countenance left her at once. Her face fell.'

Long ago at the University of Wisconsin one of my students, developing his thesis that clothes do not make the man, crescendoed in conclusion: 'Many a pair of patched trousers cover an honest heart.' That is perhaps the best example of reasoning *a posteriori* that I have ever received from a freshman. And as, yearly now, my salary shrinks, I think of it with increasing pleasure — and with hope.

HAIRDRESSERS HERE AND THERE

As a class, I like hairdressers; they are usually kind to me. My own particular man is soothing. Years ago he realized that I should never be a credit to him, and that henna and permanents and tints leave me unmoved. He knows that I am an unobtrusive person, and that I would not add to my charms by being cropped, or Etoned, or wind-swept, or wild-waved; so he lets it go at that.

But twice a year he comes down to the hardpan of facts and says, 'Your hair's fallin' out a bit, Madame,' and I say, 'Yes; it's the spring, is n't it?' — and he recommends a bottle, which I buy for the good of the house. In October he says, casually, 'Your hair's coming out rather more than it should, Madame,' and I say, 'Yes; has n't it something to do with the fall of the leaf?' — and another bottle changes hands.

The spring bottle I never touch; in the autumn I am full of good intentions, about settling down to a course of winter reading and arranging my Christmas presents early, so I rub my poor old scalp nightly, for about a week. The bottle, minus a couple of teaspoonfuls, goes in the next package to the Salvation Army; the spring one, intact, I give to some girl friend, who thinks it wonderful of me to give her such a gorgeous present out of the blue.

When I am among hairdressers who know me and my straight locks, I am at home; neither of us worries the other. And in big towns, where I am just an uninteresting stray, nobody cares. I am trimmed and shampooed, and I am ready with my references to one of the best-known London hairdressers when conversation edges round to

the fall of the leaf or the spring of the year. But the farther I get from the big towns, the more personal becomes the hair cutting, for village hairdressers say what they think.

I remember once, in the Roussillon, far from Paris and indifference, a clean little hairdresser's shop tempted me. The proprietor was merciless. English, was I? Very few came there; none to his shop; in fact, he could say with truth that this was the first English head on which he had had the honor of performing.

Then he began. He spared me nothing. He implored me to let him dye my gray hairs, to allow him to do something to a spot which, he declared, untouched, would be bald in a month; he put his shop, and his bottles, and his instruments and himself, at my feet; he got me by the scruff of the neck and held me down, first in nearly boiling water, and then in an ice-cold stream, 'straight from the mountains, Madame,' only bringing me up to the surface at intervals, to tell me exactly what I should look like at the end of two years if I did not put myself unreservedly in his hands. 'A shampoo, only a shampoo?' he kept repeating, in his singing southern French.

Finally, he said, 'Well, be it so. I have heard and I have read of the English heads. Now I have seen one. My God! Unbelievable. My son told me of them. He was nursed by English ladies in his hospital — beautiful, devoted, charming, good, skilled, indefatigable, fearless in every way; but without one permanent or water wave in the whole hospital. Now I have seen you; I believe it; I believe *anything*.'

Then he tried another plan. Did not Madame wish to give pleasure to her husband, the bearded gentleman with the aspect so kindly, now waiting for Madame at the café opposite?

Yes, Madame did — emphatically; the kindly-aspected gentleman thought the graying hair of Madame simply beautiful.

This made the hairdresser gasp, and he took a good look at my unsuspecting pro-

fessor; he was just beginning a new lure when I stopped him for good. 'Monsieur does not seem to realize that the grandmother of three grandchildren deserves and desires respect, and that gray hair is, in England, a grandmother's greatest asset,' I said coldly.

That settled him. I did not *say* I was a grandmother; that would have been too far from the truth. But I gained my point, and the rest of the proceedings interested neither of us very much.

I was in New Zealand when the craze for bobbed hair had just reached its conservative shores. To bob or not to bob was a question that apparently the men of the family were all helping to discuss. Two women hairdressers, hundreds of miles apart, each told me that they declined to bob any feminine head without the written or the spoken authority of the head of the house. I asked reasons for this surprising trace of an early Victorian attitude toward a woman's chief glory, and learned that each of my hairdressers had had unpleasant interviews with irate fathers, mothers, guardians, husbands. (I, however, saw no trace of such nonsense myself; rather, a singularly delightful and happy *camaraderie*, and much fine coöperation between men and women.)

Lately, I was being shampooed in Los Angeles; even there I know a shop where most of the unfashionable women congregate. They all have their favorite assistant, and of course the shop is absolutely up-to-date. But the other day I went there to find my own girl on holiday, and all the heads-back basins busy; so a new girl shampooed me, in an old-fashioned basin, eyes screwed tight, face in the water. I was thinking how I should loathe to make my living by scrubbing dreary women's heads, and when the girl brought me up to breathe, I said, pleasantly: —

'How you must *long* to take me by the back of the neck and hold me down in the water for five minutes.'

'How in the *world* did ye know whut Ah wuz jist thinkin'?' she gasped.



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PRECISION AND PERSPECTIVE

General Motors' Philosophy of Industrial Progress

BY ARTHUR POUND

I

WHEN the only records of discovery were myths passed along in folklore, the Greeks credited their hero, Prometheus, with stealing fire from heaven for his fellow mortals, and gave to Demeter, goddess of agriculture and fertility, praise for easing the toil of her earth-bound sons by granting them the wheel, greatest of labor-saving tools. Ever since those mists of antiquity dissolved, the most important business of mankind has been that of joining the gifts of Prometheus and Demeter by putting the power of fire behind wheels. The very pace of life depends upon the speed with which matter can be changed into energy available for transport.

Of old, the key men in transportation were stock breeders and coach makers; then inventors of steam engines and railroad builders. Now they are scientists and automotive engineers. The former discover ways and means of increasing the energy applied to wheels; the latter adapt these discoveries by balancing the ideal against the practical to improve motor cars. Like the composer of a symphony, the engineer must be aware of the myriad possibilities and limitations of the elements in his ensemble. The result of ever-improving engineering, which flows from the sense of proportion firmly held by large staffs of carefully selected specialists,

is that most widely used of modern mechanisms — the gasoline motor car.

On this base has arisen almost within a generation an industry of world-wide influence, under whose impetus material progress for the masses has been accelerated faster than ever before. The achievements of yesterday or to-day outrun in meaning those of many a distant century. This industry is overwhelmingly American both in production and in point of view. Of the 33,330,000 automobiles used in the world in 1933, 72 per cent were owned in the United States. Even in that slack year nearly 2,000,000 passenger cars and trucks, worth approximately \$1,000,000,000, were manufactured in the United States, of which nearly one eighth were exported. In the banner year of 1929, total United States and Canadian production reached 5,621,715 units, worth more than \$3,500,000,000.

This output absorbs so much of America's basic production that automobile manufacture is the nation's key industry. It is the largest buyer of steel, rubber, plate glass, nickel, lead, mohair, upholstery leather, and malleable iron, and a heavy consumer of lumber, aluminum, copper, and tin. Automotive employment in all lines exceeds 3,000,000 persons, and indirectly another 1,500,000. When you buy an automobile, scores of industries

and technical arts divide the proceeds.

In this pivotal industry General Motors occupies a central position. It manufactures and sells every year through its five car divisions — Chevrolet, Pontiac, Oldsmobile, Buick, and Cadillac-LaSalle, as well as General Motors Truck — approximately 40 per cent of all passenger cars and trucks manufactured in the United States. This volume of trade alone makes it one of the world's most impressive businesses, of interest to everyone who desires to know how a large industry functions in arriving at commercial eminence. But General Motors has other aspects even more significant than size and success. Unlike many other great companies, its eggs are not all in one basket. It takes to market a wide array of products other than motor cars and their accessories, among them many household appliances. The most widely used of these is Frigidaire, the first electric refrigerator to reach quantity production, giving rise to successful developments in air-conditioning systems, for domestic and commercial use, sold under the same trade name. Another well-known name is that of Delco, applied to a wide range of electrical products for household, farm, and accessory uses. These stem back to the former Dayton Engineering Laboratories Company, forerunner of the present General Motors Research Division.

The seeds of scientific research will flower in many different forms; in the case of General Motors the developments are naturally associated with motor power. This explains the diversity of General Motors, a diversity which ranges from giant Diesels to tiny Durex bearings, from airplanes to household appliances. The need for precision in this variety of highly specialized products, together with emphasis upon the open mind in scientific research and engineering practice, has moved General Motors toward a balanced and

steady point of view which is now its chief characteristic. This appears, as we shall see, in fields apparently remote from the engineering influence. Precision, ever more demanding through the years, in designing and manufacturing motor cars, has helped to create a perspective now dominant in all General Motors affairs.

II

The first gasoline engines were perhaps 5 per cent efficient; yet even these ranked high in contrast with steam engines. To-day the best ones are 30 per cent efficient and the efficiency ratio is steadily rising. Ethyl gasoline, developed by General Motors, played a very important part in this gain. But engineers and technicians still have plenty of leeway this side of perfection in recovering for public use the high potential energy of gasoline. The man behind the automobile wheel seldom realizes that he is using a fuel six times as powerful as nitroglycerine. With all its faults, faults more apparent to the specialist than to the layman, the automobile engine even in inexperienced hands is several times more efficient than a steam engine in expert hands.

Significant socially is the fact that the owner-operator of a gasoline car is also the citizen who votes and pays for good roads and other traffic accommodations. America has been gaining a new landscape. Extension of hard-surfaced roads, broadening of urban, suburban, and countryside developments, centralized schools, and scores of other changes equally obvious and momentous, all result from social pressure to adjust the American scene to public desire for the fullest possible satisfaction from its favorite conveyance. Anyone who glances at the list of automobile references in the index to *Recent Social Trends* must be impressed by its massive testimony to the automobile's influence

on rural, community, family, church, and economic life. The American point of view has changed along with its landscape. We are not as sectional as we were, nor as stand-pat. We know that there is another side to every hill and depend largely upon scientific and industrial advance to push us over the top.

The safety of the motoring population, no less than its convenience and satisfaction, is an essential which automobile engineers jealously guard. It is easy for any smart engineer to exaggerate any characteristic of a car along almost any line. In fact, this is not nearly so difficult as wise design based upon proper correlation of the factors necessary to economy, safety, durability, ease of operation, style appeal, and riding quality, to mention only a few. Emphasis on one feature of performance may be at the expense of other features.

Many an ideal gain must wait until a way can be found to incorporate it in the car without disturbing the existing balance of forces and materials. Perhaps a new alloy is needed. The engineer must often mark time for the metallurgist, and the metallurgist for the chemist. The influences of the scientist, the technician, and the consumer meet in the engineering rooms, where through twenty-five years there has been evolving a balanced practice and philosophy of engineering advance.

III

At its birth in 1908, General Motors gathered together a number of automobile and parts companies, each independently operated. One of these, Olds Motor Works, erected the first American factory for automobile production. It pioneered in modern assembly methods and, in its famous Oldsmobile runabout, first reached quantity production. Another, Cadil-

lac, had just won the Dewar trophy in London for the greatest contribution to automobile advance, by demonstrating the interchangeability of parts which is the key to the assembly line and to mass production. This naturally stressed higher engineering standards.

General Motors realized early that every model must be an engineering unit, planned from inception to carry a certain load, with each part designed in relation to all other parts. In an industry rapidly advancing both in machine shop practice and in scientific research, the less left to chance and whim the better. The process was one of reducing complications for users, at the price of increasing complications of engineering. Concern for customer peace of mind brought to pass a situation which would be considered remarkable if it were not commonplace. To-day the automobile buyer acquires at reasonable cost one of the most complicated machines ever devised by human ingenuity. He operates that machine without being aware precisely what mechanical and chemical processes he controls.

This engineering progress, by enhancing the personal mobility of millions, inevitably brought the great public into the automobile orbit. There began to develop, within an organization accustomed to the working out of precise relationships, a growing recognition of the manifold equities involved in its rapidly expanding business. Here again the sense of proportion, the feeling that General Motors was in business for the long pull, made itself effective. In its major relations General Motors arrived at a code of its own years before the word 'code' became a commonplace in industry. Its leaders perceived that in the long run General Motors would survive through the equitable nature of its dealings with certain large groups whose good will was essential. To stockholders it owed

reasonable dividends and security; to suppliers it owed fair prices; to employees it owed good wages and salaries which would maintain a high purchasing power; to dealers it owed opportunity for fair profits; to customers it owed dependable merchandise and satisfactory service; and to the American people it owed such an administration of its affairs that it could never be justly accused of lack of candor or disregard of public interest.

Indication of the wisdom of this policy may be seen in a stockholder list of some 350,000 names. General Motors rejoices in this evidence of public confidence. Such a large stockholder interest gives news value to all General Motors announcements and financial statements. These are notable for their frank and detailed character, as befits an accounting rendered to thousands of persons with small stock holdings unaccustomed to interpreting condensed financial statements. Such trends and activities have led General Motors to think of and conduct itself as 'a public-minded institution.'

These policies have borne results. Preferred stock dividends have been paid regularly, and only once since common dividends began have they been interrupted. When hours of work had to be reduced in the plants, a programme of work sharing was promptly inaugurated. The sum of \$97,000,000 became available to participating employees from 1930 to 1933 inclusive through withdrawals from Savings and Investment Funds, accumulated through prosperous years as the joint result of individual thrift and company participation. When the Michigan banking troubles of 1933 left Detroit without a large commercial bank, General Motors joined with the Federal Government to establish the National Bank of Detroit. This it did entirely without hope of profit or expectation of remaining in the banking business, and

thereby provided facilities for ordinary trade and industry in that community. At the first possible moment wages were advanced to pre-depression levels and in some cases beyond, while complete coöperation was given to the government in raising employment by shortening hours in accordance with code provisions. Recently the management has set up adequate machinery for resolving labor disputes through conference with freely elected representatives of its workers. The plan has been carefully considered and fits in with the traditions of a body of labor which was drawn into an expanding and high-wage industry largely from the fields and forests of Michigan, a population individualist by nature and traditionally more alive to personal opportunity than to collective action. This far-sighted plan is the considered utterance of men who do not promise lightly.

From a survey of these developments, all the way from engineering and factory details up to the matters of broad social import, there emerge the outlines of a corporate character in which the dominant note is a well-balanced sense of proportion. General Motors avoids 'trick' engineering and flashy financing, because it expects to be in business a long time. It cannot afford to hurry unduly a hopeful development; it can afford to wait until it is sure that every contingency has been foreseen by trained minds.

IV

In bringing the automobile thus far along, epoch-making changes, which seem to come like lightning, are usually the fruitage of patient years of study. Such was Charles F. Kettering's Delco electric self-starter, in the days of the Dayton Engineering Laboratories Company. This great innovation was in the making for years before it became standard equipment

on Cadillac in 1912. Again, although rear-wheel braking had developed an impressive body of brake knowledge by 1923, several months were required by Buick to work that knowledge over effectively enough to warrant the pioneer installation of four-wheel brakes. Engineers were aware that fitting brakes to front wheels involved an entirely new set of factors. This became a decisive achievement, since the new braking system, instead of being merely added, had been incorporated in the car with attention to every necessary chassis alteration. Still a third case is independent front-wheel suspension, popularly known as 'knee-action' wheels. All new mechanical developments are rigorously tested at the 1248-acre General Motors Proving Ground, where every kind of terrain and driving surface is represented.

While divisional autonomy prevails in General Motors engineering practice, it is the special function of the Research Laboratories and the central engineering staff to conduct added studies along original lines, presenting the results to divisional staffs; to undertake tests and studies at the request of divisional staffs; and to advise with divisional staffs. Within this broad control final responsibility rests with the divisional engineers. They stand or fall by their products, and no limits are set upon their resourcefulness within the limits of sound practice. Standardization of materials is emphasized throughout; but standardization of thought — No!

For the sake of convenience and economy certain material specifications, such as screw threads, have been standardized; but in the realm of ideas and methods the emphasis is all on the open mind, not only as to specific improvements, but also as to new ways of fitting those improvements into a well-proportioned whole. Products are standardized only in the sense that for a

given period a single model may be manufactured economically in quantity, but no sooner is that model in production than engineers begin the improvements which will mark its successor. Experiments are under way to-day which may be five years or more in reaching the public. When a variation has been tested market-wise by one division, it is thereafter available to all divisions. Thus, as in the case of the electric self-starter, crank-case ventilation, and synchro-mesh transmission, the step may first be taken on Cadillac, the highest-priced car in the line, and then applied to the less expensive cars as costs and circumstances permit. An innovation may be used first on a quantity car, as in the case of Duco lacquer finish, before being extended to other cars. Or, after thorough laboratory and Proving Ground tests, a change may be made in the general line, as was the case with both knee-action wheels and no-draft ventilation.

Fuel research provides a striking example of the untrammelled activity of the General Motors Research Division in its influence on the engineering staffs of car divisions. About fifteen years ago engineers awoke to the fact that inferior fuels were limiting engine efficiency. Endeavors to secure more power from an engine of given size were checkmated by the 'knock,' characteristic of the gasoline then available. Years passed before the fuel, rather than the engine design, was recognized as the culprit, after arduous scientific detective work. Thousands of compounds were burned in a cylinder under observation. Of these, several silenced the knock by delaying the burning of the last of the fuel charge, thus removing the over-high pressure due to almost instantaneous combustion. At last one such compound seemed to have commercial possibilities. This was tetraethyl lead, then expensive simply because it was pro-

duced in small quantity. A new industry, which in its present stage involves the recovery of bromine from sea water and opens possibilities of recovering other values from the treasure house of the sea, had to be developed before the result of these chemical researches could be utilized by the public.

The story of Ethyl, trade name of an anti-knock compound for mixing with gasolines, is one of the great pursuit tales of science, similar to that of Edison's search for a satisfactory electric light filament. Not the least of the achievements of Ethyl research was to raise one of the limiting factors in engine design and to set the stage for a series of improvements hitherto not feasible. Technical advances matured in this thorough way benefit General Motors and its customers directly; they also become part of the ever-growing body of knowledge which society inherits, each generation becoming richer than its predecessor in means of controlling natural forces and elevating living standards.

Many General Motors innovations increase employment through stimulating activity by suppliers of new materials; others prove decisively beneficial in great industries altogether outside of the automotive field. For instance, note the welcome accorded by practical railway executives to General Motors improvements on the Diesel engine, long manufactured by its subsidiary, the Winton Engine Corporation. Streamlined trains, the stainless-steel Burlington Zephyr and the aluminum M-10,001 of the Union Pacific, electrically driven by current generated on the train itself, have recently broken American records for sustained railway speeds on long runs. As yet their speed possibilities have not been fully attained. This stirring development, which has brought new life to railroads, was initiated by an indus-

try generally held to be their most pressing competitor. By applying to Diesel engines the knowledge gained through concentration upon gasoline engines, General Motors came to the rescue of another transportation industry in which, for reasons not at all discreditable, large-scale research and experiment had been neglected.

Perils of leadership beset the engineer in all fields, particularly in the automotive industry. For example, General Motors assumed heavy risks when it revised the whole low-cost car situation by making Chevrolet a six-cylinder car, thereby sounding the death knell of 'fours' in the passenger car field. To reëquip its factories for the enormous production which followed cost as much as the entire capitalization of some good-sized companies. The result was to give a decisive twist to automobile progress and to make Chevrolet the most popular motor car.

Looking backward, it is easy to see that every improvement in process and product by General Motors has benefited the entire industry no less than the public. The electric self-starter, which overnight doubled the potential drivers by adding women to the number, was hailed as impracticable. When Buick adopted four-wheel brakes the cry of 'danger' was raised in advance of public trial. In lesser degree, but nevertheless sufficiently to emphasize the penalties of leadership, these demonstrated successes were put through the wringer of criticism — Duco, crankcase ventilation, Ethyl gasoline, tilt-beam and multibeam headlights, the intake silencer, automatic choke, and synchro-mesh transmission. More recently Fisher no-draft ventilation and individual front-wheel suspension have established themselves as features likely to enjoy long public favor. The newest contribution is the all-steel roof, or 'turret top,' to appear in the 1935 General Motors line.

General Motors' philosophy of business includes the conviction that the public can be trusted to reject changes which either lack merit or involve enough care and expense to offset their merits. The common sense of a mechanically-minded people soon discovers the difference between a decisive improvement and a mere 'gadget.' The latter may do precisely what it is intended to do. But if what it does is relatively unimportant, increases hazards, or decreases comfort, it soon dies a natural death. A recent example was the free-wheeling device, which works admirably but to no important purpose, and involves extra operating risks.

Extreme streamlining is another innovation which will probably lose its appeal gradually, although not without influencing designers toward new beauties in line with the youthful science of aerodynamics. President Alfred P. Sloan, Jr., recently analyzed the subject of streamlining of automobiles as follows: 'The popular belief is that there is a very distinct gain in the general efficiency of a design embodying certain aerodynamic features. The operating conditions of these various instrumentalities of transportation¹ are so different that each must be considered on the basis of its own individual circumstances, so far as the question of efficiency is concerned. As applied to motor cars, in which General Motors is primarily interested, there are in reality no important economies in the practical sense of the word, in either first cost or operating cost. The greatest possible gain that can be expected is a somewhat higher top speed, or perhaps at top speed a slight saving in fuel, all other circumstances being the same.'

V

In a business characterized by huge volume and high preliminary expense,

¹Airplanes and streamlined trains.—AUTHOR

innovations cost money. They are profitable when they win acceptance, burdensome when they fail. To eliminate guesswork, General Motors has undertaken to guard against marketing blunders by studying public moods and desires in advance of production. The Customer Research Staff of General Motors discovers what automotive improvements the public most desires, and passes that information on to engineering staffs.

Ingenuity of approach, thoroughness of investigation, and volume of information from all parts of the country combine to make this a unique guide to engineering policy. More than 500,000 motorists have answered the bureau's questionnaires, including 81,000 'sophisticates' with evident expert knowledge. These alert enthusiasts are eyes and ears for General Motors throughout the nation, reporting what they see and hear and think. Always ahead of the rank and file, they indicate what the public will be looking for in the near future. In practice, a balance must be struck between what the mass mind will accept and what the sophisticated desires.

Customer research shows that purchase of a motor car is one of the most serious decisions taken by the American citizen. Since the average automobile is replaced once in four years, John Doe may be considered as in the market only that often, his buying ardor lasting for some sixty days, during which period he expects to have his wants taken seriously. He takes counsel of his family and resents being rushed off his feet by 'high-pressure' salesmen. The buying mood of to-day is sober, deliberate, and insistent on full information, an attitude which is in complete harmony with the whole General Motors point of view.

Selling has become sales engineering, a matter of calm study rather than strong argument, a business

of weighing trends and giving the public what it wants.

Of course, customer recommendations do not always bear immediate results. The situation is analogous to house building, where the customer expresses desires but leaves it to the architect to incorporate the suggestions in the plan, if the budget permits and the amateur ideas are not impracticable. Customer research is thus an avenue of contact between users and designers, of value to both in the long run as a means of avoiding guesswork and snap decisions.

VI

With all its scientific research, with all its engineering technique, with all its inquiries into customer preferences, General Motors recognizes that these would be of no avail except for the loyal coöperation of skilled factory employees who bring the ripe wisdom of experienced craftsmen to the solutions of problems not reducible to blueprints.

In General Motors factories one frequently hears this sentence: 'Our best output is men.' And with it another: 'We can do it, because we have the men.' The organization which normally employs more than 200,000 persons in its world-wide operations remembers that personnel is the foundation of the pyramid; the men who make, vend, and service the goods can break the engineer's heart and the company's reputation with the public. Management is aware that its engineers and its factory men, working together, have built its prestige in the market place. In both human and trade relations, as well as in the engineering progress which General Motors has made available to the public through its products, harmonious, equitable coöperation is the goal.

This, then, is General Motors, drawing on the past but looking also to the future, as indicated by its watchword, 'An Eye to the Future — an Ear to the Ground.' This reflects a determination to give the public what it wants in better products year after year, and at the same time to protect consumers against questionable experiments. In financial solidity and volume of trade General Motors ranks among the world's leading business organizations; but equally noteworthy is its growth toward policies and methods of procedure which give it survival value beyond those of inventory and balance sheet. To these it has been led after calm fact-finding; after balancing against one another all the considerations in its complex problems, precisely as its engineers and scientists bring the open mind and a due sense of proportion to bear upon the technical problems involved in design and manufacture.

Industrial engineering has grown in this case to possess social implications. As the need for perspective has been heightened by the engineering precision which has made the motor car a commonplace in modern society, so the exact thought habits of science have been followed until perspective has been transferred to non-engineering fields and relationships in an attempt to see the responsibility of modern industry steadily and see it whole. This suggests the classic definition of the task of philosophy, 'to see life steadily and see it whole.' The disciplined and coöperative intelligence manifest in this vital industrial grouping is a direct result of the long schooling man has undergone all through the ages under a great and driving imperative to put power, more power and ever more power, behind wheels for the increasing convenience and prosperity of society.

THE CONTRIBUTORS' COLUMN

It has long seemed to the editors of the ATLANTIC that, despite the acute intelligence displayed by designers of American advertising, the individual character of the separate advertisements constantly diverted the reader from the realization that advertising has become the condensed and accurate present-day history of American business to which future historians must continually recur. After careful reflection, the ATLANTIC has hit on an idea whereby a lucid and stimulating study by Arthur Pound, interpreting each month the philosophy of one of the great units of American industry, is combined with a series of graphic pages outlining individual characteristics of different companies, so combined as to give a single dominant impression. The whole enterprise is an advertising venture which we believe quite as interesting to the thoughtful reader as any purely literary feature of the magazine, and the coördination seems to us amply to prove the basic theory of the enterprise, that America and American industry are one.

1 1 1

If you are a radio listener you have been exercised over the problem of radio control. How can the cost of radio best be met? What should the relation of government to radio be? Reformers have urged the British system of government control; conservative Americans have pointed out the superiority of many programmes sponsored by commercial interests. But it remains for one who has himself contributed largely to the delight of radio audiences to remind us that an even more fundamental problem is the technical one of transmission, of sending music and speech over the air in complete and undistorted form. It is needless to add that **Leopold Stokowski**, the great musician who calls attention to 'New Vistas in Radio,' was leader of the Philadelphia Orchestra for twenty-two years until his resignation on December 6. Perhaps his most creative contribution has been the encouragement not only of new and original talent in composition and performance, but also of mechanical experiments and developments which will en-

rich the music of the future. A pioneer in radio, his vision of its possibilities is as informed as it is farseeing. **Berwin Kaiser** ('The \$10,000 Gallon of Oil') 'lived in a household where the Atlantic was the only magazine permitted to cross the threshold,' presumably until he went to Harvard, where he graduated in 1923. Since then he has been advertising copy-writer, editor of retail-store trade publications, and free lance; he is now engaged in sales promotion.

'History and the Louse' is a chapter from *Rats, Lice, and History*, a book to be published in the early spring by the Atlantic Monthly Press, which deals with the immense influence of great pestilences upon human civilization. Readers who discovered 'The Deadly Arts' in our November issue do not need to be reminded that **Hans Zinsser**, in addition to being an authority on infectious disease, Professor of Bacteriology and Immunology successively at Stanford, Columbia, and Harvard Universities, is also that rarest of phenomena, a scientist who can write. Δ Sir Esme Howard once cabled the Foreign Office: 'Simonds was optimistic in his dispatch this morning. What's wrong with the Naval Conference?' 'From Wilson to Hitler' is no such aberration, perhaps, but it reveals the usual knowledge and clarity which characterize all of **Frank H. Simonds's** pronouncements on international affairs. Δ 'Moonlight' brings another vision of the English countryside through the observant eyes of **Henry Williamson**, winner of the Hawthornden prize with his novel, *Tarka the Otter*. **Gertrude Scott** ('Obit for E. Harris') has published only one previous story, and that, too, had for background a familiar scene: Miss Scott works in a New York bank and hopes some day to write a novel about a bank 'without a holdup or a forgery.' Δ 'Who Gets Relief?' **Douglas McClure Anderson**, a young college graduate educated for teaching, who has served for two years as investigator for a County Relief Board, offers entirely factual information. **John A. Holmes** ('Testament') teaches courses in modern poetry and composition at Tufts College.

'Finale in Moscow' closes the chapter called 'Youth and Revolution' from the forthcoming *Personal History* which **Vincent Sheean**, a foreign correspondent in the nineteen-twenties, will shortly publish. **J. W. N. Sullivan** ('This Mysterious Universe') reviews scientific books for the *London Times Literary Supplement* and sheds light on the mysteries of science in books and articles of his own. Δ 'The Steep Path' should recall 'Leora's Father,' in our November issue, which was the first published story of **Katharine Hamill**, a voluntary exile to Vermont this winter from her work on *Fortune* magazine. Δ Professor Carl Joachim Friedrich's paper in October, attacking 'progressive' education, called forth the progressive reserves *en masse*, so that our choice of a champion was almost unlimited. **James L. Mursell** ('Education and Happiness') was one of the latest to appear in the lists, and one of the best-equipped. Educated in England and Australia, with a Ph.D. in philosophy from Harvard, he is now Professor of Education in Lawrence College, Wisconsin, and author of several books on his subject. Δ That 'retired bookseller,' **Alan Devoe**, has retired still farther into the country, — this time upstate New York, — where apparently he cannot resist setting out 'More Books by the Roadside.' Δ 'Religion in England' contains reflections by the **Very Reverend W. R. Inge**, Dean of St. Paul's from 1911 until his recent retirement. Δ 'With the A. E. F.' concludes the *Atlantic's* excerpts from the war-time journal of **Harvey Cushing**, America's most distinguished brain surgeon. Δ Last October **Arthur Pound** paid his native Pontiac, Michigan, a two-day visit, and the event was celebrated as a 'Homecoming' at which the whole town turned out to do him honor. At that time the Editor of the *Atlantic* wrote of him: —

'My friend Pound.' I think ten thousand others might use the phrase with literal truth. Certainly I can. I have known him some fourteen years and am familiar with the qualities of his mind. Put into a word, he is intelligent curiosity incarnate. His mind is speculative and constructive. What are the valuable elements in American life? How can we enlarge them? How add to them? Thought of this kind he carries to bed with him, and when he gets up in the morning the yeast is fermenting.

Out of the multitude of his ideas one is gradually taking precedence: the industrial history of America, as it was, is, and shall be. I am one of the friends of Pound who believe that his first conspicuous work, *The Iron Man in Industry*, is the true guidepost of his trail through life. His

interpretation of the social effects of rapid communications as seen in the telephone industry and his fascinating *Turning Wheel* confirm my assurance.

With this steadily in mind I have persuaded him to write a volume to be entitled *Industrial America: Its Way of Thought and Work*. The plan is to select a number of examples from amongst our greatest businesses, and to follow the industrial philosophy of each with understanding, sympathy, and ever-present realization that upon the wise and humane conduct of industry the welfare and happiness of the people depend.

It is with rare pleasure that the *Atlantic* introduces the first chapter in this series, 'Precision and Perspective' — a study of General Motors.

1 1 1

Addendum.

On the eighth page of Mr. Stokowski's article, at the end of the first paragraph in the second column, the author wished to insert the following sentences which reached us too late to be printed with the text: —

'The physicist has developed new principles and techniques. But it is for others to apply these principles and techniques to our daily life. All of us who find inspiration in great music can receive the benefit of these new principles and techniques if we make our demand clear and strong.'

From a radio engineer.

Mr. Stokowski sends us the following letter which he has just received from Mr. C. W. Horn, Director of Research and Development of the National Broadcasting Company. Though long, it is worth quoting in full for its bearing on Mr. Stokowski's article in this issue.

Dear Mr. Stokowski: —

I had the great pleasure of reading your article entitled 'New Vistas in Radio.' It afforded me much satisfaction to realize that a musician undertook the study of sound and recognized the laws of physics governing sound. I am sure that you will agree with me that this is rather unusual and that there is generally a wide gulf between the physicist and the musician.

You have very clearly explained, so that the layman may recognize, the principles underlying sound, the mechanism required to pick up sound and transmit it by wire and radio, and the reproduction of it into pressure waves. Obviously, the ideal is to have the ear present where the sound is being generated. Radio endeavors to convey the sound from its originating source over distances and to reproduce it with as much fidelity as possible. Right here is where the primary difference between reproduced sound and



STAND UP AND DARE!

A VAST MAJORITY of America's truly great businesses had their beginning — resolutely laid the foundations of their success — in times of depression as disheartening to the timorous as the years through which we have recently passed.

And so today, or tomorrow, the true state of business must be measured by the courage of its leadership, its determination to go ahead.

Goodyear has expressed its faith in the soundness of this principle by releasing, over the past

five years, the greatest program of development and improvement that the largest rubber company in the world has ever undertaken.

From this activity a swelling volume of new products and services has come to the public, including the conspicuously successful "G-3" All-Weather and its running mate, the Airwheel*, of which Goodyear is manufacturing five times as many as are all other makers of super-soft tires combined!



W. H. Mitchell
PRESIDENT,

THE GOODYEAR TIRE & RUBBER COMPANY, INC.

★ AIRWHEEL is Goodyear's trade-mark, registered in the U. S. A. and throughout the world, and is used to denote that Goodyear is the exclusive maker of AIRWHEEL Tires

sound being heard at its source comes in. The listener in the presence of an orchestra depends upon his ears, behind which there is a brain. It is possible for him to disregard annoying incidents, disturbing sounds, and even reverberations and echoes. He can concentrate and focus his attention on the sound that he desires to hear. Because he has two ears, he is able to so concentrate and focus his attention. By placing a microphone in a room we immediately lose the benefit of the brain. A microphone will pick up sounds that strike it and it has no discrimination as to their origin or direction, as a rule. This is somewhat overcome by using the so-called binaural effect. But even with such a method the microphone will pick up whatever sound exists in its vicinity. This sound is then amplified and transmitted, by whatever means are used, to a loud speaker which reproduces what this microphone has heard. The human being then concentrates his attention to the loud speaker and is unable under this condition to differentiate or discriminate against unwanted sounds. For this reason reverberations are more exaggerated when heard over a loud speaker than when a person is present in a hall where the sound originates.

I am afraid that we shall always have difficulty along this line even though we use the binaural effect which gives us some sense of direction. The only solution to this problem would be a brain at the microphone, which is of course out of reason. I am mentioning this fact merely to show that we are still far from even theoretically reproducing sound absolutely and with perfect fidelity. This therefore leads us to changing the conditions at the originating point in order to make more pleasing the sound as reproduced. This means halls and auditoriums with different acoustics than are used when playing to an audience.

There are other compromises which are necessary, some of them due to lack of perfection of apparatus and facilities, which account for many of the shortcomings you criticize. Some of these are gradually being overcome. One is the rather restricted dynamic range which we now are compelled to use. Wire lines with their associated equipment at present are not capable of greatly extending the dynamic range. Radical changes and improvements will have to be made which will take a great deal of time and heavy investments. Receiving sets must have amplifiers of greater capacity, which of course time will also correct.

I do wish to state, however, that broadcasting transmitters as a rule, particularly those installed within the last two years, are capable of handling frequencies of 10,000 cycles and higher. This is getting near the 13,000 cycles which you have set as a feasible limit. I was present when Dr. Fletcher made tests on audiences and found that very few could tell the difference between 8000 and 13,000 cycles except on some instru-

ments. For this reason the engineering groups have accepted 8000 cycles as an immediate step to achieve and to work for. Here in Radio City our equipment, which consists of microphones, amplifiers, and some of our special loud speakers, is capable of going beyond 15,000 cycles. The full advantage of this of course is lost, however, when it goes over the lines and because most of the receiving sets are not capable of responding to such frequencies. However, I want to be put on record as stating that the National Broadcasting Company has recognized this desire and need for improvement in quality and has spent vast sums in its new studios to accomplish this, even though it may be some time before lines, transmitters, and receiving sets are capable of taking advantage of these high standards.

There is one item in your article which I feel deserves mention as being very difficult of achievement. You present an idea of zoning the country in order to have wider channels over which to transmit programmes. It is a fact that the country is already zoned on a 10,000-cycle basis. No two stations in the same vicinity are within 50,000 cycles of each other and there is spacing between zones so that the stations which are neighboring to each other in the allocation band are usually some great distance apart geographically. However, even this does not solve the problem, because we have no control over atmospheric conditions and it is frequently possible to hear stations at 1000 or 2000 miles distance. Zoning is therefore not the answer.

In order to provide for channels capable of handling frequencies from 30 to 13,000 cycles, they would have to be approximately 30,000 cycles in width, or three times the present capabilities of the channels. This does not mean that if we provided but one station where three now exist we should solve the problem. Actually we should have to discard all but a few of our stations and to a number so small as to inadequately serve the country. This is particularly true if we desire to improve reception from a dynamic standpoint. During the soft passages it is necessary that the interfering signal be kept at such a low value that it would not distract the listener. Excellent reception would only be possible very close to the transmitting stations, as we have not as yet found a way of overcoming fading, with consequent side-band distortion. This is particularly true in short-wave transmissions, where it is more difficult to attain high quality transmissions because of the selective fading and side-band distortion which exist. However, I feel that we shall keep on making improvements which will gradually overcome many of these difficulties.

The engineers are generally pretty much agreed that the next major step is to make available receivers having an extended range over those now in existence for the benefit of those who live sufficiently near their local station to be within



Lo, The Poor Indian

POOR Lo might have led a pretty hard life, judged according to our effete modern standards, but he did enjoy at least one advantage denied most city dwellers. Because he lived out-of-doors, he used his eyes as they were intended to be used. In consequence, his vision was often as sharp as an eagle's, at an age when most moderns are barely avoiding collisions with major obstructions, thanks to bifocals.

It is not possible for all of us to move out into the country. Nor is it possible or desirable to abolish all the magazines, newspapers, and books, and to do away with all tasks involving a concentration of vision. The only thing you can do with your eyes is preserve them as well as you can, avoiding unnecessary strain, and letting the eye-sight specialist take care of them.

There is, however, one vital factor in

preventing unnecessary strains on your eyes, which you can control. And that is **LIGHT**. See that your eyes always have sufficient light to do their work both at the office and in your home. Eye strain is not immediately apparent. It may never make itself known until serious trouble develops. General Electric lighting engineers have found that the minimum level of lighting for good reading is from three to ten times that ordinarily found in the home or in the office.

The chances are that as you read this, the light on the page does not approach even this level. Let a representative of your power company call with a "Sight Meter" and measure the levels of illumination at your desk and at the easy chair where you read in the evenings. Then try for yourself the effects of more nearly adequate lighting. General Electric, Schenectady, New York.

GENERAL  **ELECTRIC**

the high-signal-level area. Improvements along these lines have been continuously made and will continue to be made. One of our obstacles is the fact that the average purchaser of a receiver is frequently incapable of appreciating the better quality that is offered, usually at a higher price, and it becomes a question of education, which in itself is a slow process.

I personally witnessed the demonstration you gave in Washington when you reproduced the Symphony Orchestra playing at Philadelphia. I very greatly appreciated the marvelous control it gave you over the dynamic range and the fine quality of reproduction. You reproduced the music with a dynamic range much greater than any orchestra alone could have accomplished. It was therefore not simply reproduction, but re-creation — or, rather, you improved upon the original production. Being an engineer, I also know something of the tremendous efforts that were made by the telephone engineers to provide the circuits and equipment necessary to do this. What you actually had was a laboratory set-up. To make such facilities available to the general public requires a tremendous realignment of facilities and a great deal of new and expensive equipment. It was not a very simple matter, though one might not so infer from your article. However, it showed what could be done, which is the first step toward final accomplishment on a practical basis. You have not discussed the economic factors involved, which is my answer as to the reason why such improvements are not made immediately available to the public. For many years we have had airplanes capable of flying long distances, but it required many improvements in auxiliary services before regular established air lines could function practically. An engineer always must take into consideration the time factor in any equation. The economist must do the same. The theorist often overlooks the value of this time factor.

From the above you will see that I am in general agreement with your thoughts, but, being one who has in the past frequently been charged with the responsibility of putting theory into practice, I am naturally somewhat conservative. I have been forced to face the realities and conditions that are in existence. I therefore very greatly value the mind that is capable of finding means and methods whereby theory can be put into practice with the least amount of resistance. On the other hand, however, I am something of a theorist and dreamer myself and have often wished that I could be an absolute dictator or tsar so that I might accomplish some of these dreams. It is this restless feeling chafing at restraint that is the force behind our major developments.

You mentioned short-wave transmissions. I am a pioneer in this activity and often took tremendous responsibility upon myself when I promised to bring over an important programme

from Europe, and if atmospheric conditions had failed me I should have been laughed at and discredited. I mention this merely to show that in our organization, as well as in the engineering field in general, we are always ready to force development and take a chance. Therefore the reader of your article who mistakenly assumes that you are criticizing the engineer, which I do not believe you are doing, is quite likely to mislead himself if he forms such an opinion. We need such comments as you are giving us, and we are naturally spurred on by such criticisms. I believe that we are fortunate in having a man of your ability in the musical field take an interest in the engineering factors involved, which can only result in mutual benefit. Therefore I feel that your article is one that should be read by serious thinking people with a great deal of interest and I am happy that you have so written it that it is not controversial or in criticism of any group, but is rather a presentation of the possibilities which lie before us. As a radio man true to his traditions, I want to conclude with the statement that radio will accomplish everything that other transmission mediums, such as wires, now do or will be capable of doing. I therefore draw no line between 'space radio' and 'wired radio,' because I believe that we shall solve our problems one by one.

C. W. HORN
New York City

To the chigger.

Dear Atlantic, —

I was very much entertained by Mr. Wendell Brooks Phillips's article on chiggers — 'Summer Among the Varmints.' I wonder if the author has heard the toast to the chigger: —

Here's to the chigger
That ain't no bigger
Than the point of a good-sized pin,
But the bump that he raises
Itches like blazes
And that's where the rub comes in.

(DR.) WALTER D. WISE
Baltimore, Maryland

'Bug' song.

Dear Atlantic, —

I thoroughly enjoyed the paper by Dr. Hans Zinsser in the November *Atlantic*, especially where the learned doctor practised dissection on some of the hypothetical writers and poets. Granted they are illuminati, as we know they must be by the 'lightning's bright flash' they give us on rare occasions, why, as he says, do they choose to play with their minds, giving out moronic jumbles without thought or reason?

I have in my possession a collection of scribbles written by the inmate of an insane institution in a near-by state that comes perilously



A Feeble Light that became **A BEACON of PROGRESS**

Great undertakings often stem from least suspected beginnings. Who, among our forebears of 65 years ago, imagined that the faint glow of the simple kerosene lamp was in reality the beacon of a gigantic new industry . . . harbinger of an era whose accomplishments were to touch with magic the lives of all mankind!

Yet, the subsequent development of petroleum wrought a veritable epic of progress.

In 1870—with the advent of Standard Oil—came directed and effective effort to plumb the dormant possibilities and utilize the latent powers of this mysterious fluid which once had borne the macabre cognomen—"Devil's Tar."

"Crude" was no longer allowed to waste itself upon the soil.

Scientists began revealing hitherto unimagined wonders of this sleeping leviathan.

Engineers, availing themselves of these discoveries, diverted it to new uses . . . in commerce . . . in industry . . . and in the home.

Nurtured on its richness, great enterprises sprang into being.

It was set to making wheels run faster and faster . . . smoother and smoother.

And presently, the world at large awoke to a new age of speed and efficiency.

Through the wizardry of petroleum, men of all lands, of all colors, creeds and conditions have been benefited.

And woven into the fabric of this narrative of achievement, the story of the Standard Oil Company (New Jersey) threads its certain course like a bright ribbon . . . giving promise of ever greater accomplishments in the future than have illumined the pages of the past.

near to some of the drivel passing as literature, with this difference: the 'bug' achieves at least a readable coherence. Con the poem below and judge if you do not conclude it merits a seat on Pegasus at least as well as some of the Stein songs.

Complete independence is my creed.
No words or acts enable me to know that I will.
Behold that which is mine and not thine.
I will do with just as I will as it is but for me.
I the master and you the slave, come do my will
For you shall, as it is that way.
Go my servant to the field
Fetch me the finest melon.
No such has ever yet proved the equal
Of presenting itself to me,
As my mind has forever roved
Over millions of bright, beautiful day-dreams.
I live and move with power to create
And my own hand is capable of anything.
I am the all in all, with all power,
Knowledge, etc., fully mine.

Reminds one of the early Whitman, too,
does n't it?

PAUL M. STRAIN
Bloomington, Indiana

Another doctor looks at poets.

Dear Atlantic, —

Truly I love 'The Deadly Arts' by Dr. Hans Zinsser in your November number! Do find place for these lines by another physician, Dr. Doremus Scudder, who, enraged by a recent lecture on poetry, writes of modern poetry and poets: —

. . . Stirrers of emotion, devotees of beauty,
creators of thought,
Rhythmic singers, interpreters of the Ideal,
Can claim no more the sacred name of Poet.
Give place then to these worshippers of verbiage,
Uncouth, strange, lovers of sound sans meaning,
Crown them alone with laurel wreath.

PHEBE ESTELLE SPALDING
Claremont, California

In public places.

Dear Atlantic, —

Speaking of signs, why travel so far as New Hampshire, Indiana, or Missouri, when you need only cross the Hudson on a Weehawken Ferry to read the following: —

NO SPITTING ALLOWED
LIFE PRESERVERS UNDER THE SEAT

MARIAN SACHS
New York City

Dear Atlantic, —

Here's another sign decorating the corridors of an excellent hospital in Illinois: 'No Children under Twelve Allowed in the Maternity Ward.'

REVEREND J. A. RICHARDS
Oberlin, Ohio

Dear Atlantic, —

Until the building was torn down a few years ago, I used often to pass the window of a tailor's shop in which was a sign reading: 'Pants Pressed in the Rear While You Wait.'

HELEN C. BACON
Boston, Massachusetts

A punster's geography of Montana.

Dear Atlantic, —

That Titular Tourist of yours had better stay away from Montana or preserve his anonymity while he is in the state. He finds only two towns in the whole great state worth visiting, does he? The very idea!

Where else will he be able to drive into a Bearmouth? Where else, if his car breaks down, can he Hopp to Big Sandy and Roundup a jitney, or Pray to live in sweet Accord, Content, or like a bee in Rosebud? If all else fails, where better can he Locate Cyanide? Has he ever Been to Bean? He admits having unsuccessfully hunted for Hell. In Montana he can go through Hell Gate, spend an hour in Paradise, and be past Hope in a few short hours.

Maybe your Titular Tourist is timid and fears to spend his time in a state that tolerates a rather large Anaconda sprawling in the western sun. Still, many provisions have been made for the comfort of travelers. There are a Baker and a Barber, a Bay Horse, Plentywood, Pure Water or Whitewater, as you prefer, Whitefish and Prairie Elk for dinner, a Basin to cook them in, and an Emigrant, an Amazon, and Coolidge to eat the feast after it is prepared. Coffee Creek, of course, provides another beverage for the credulous traveler.

Until I saw a resident of the state, I thought that the Titular Tourist ignored Montana because a Society for the Renaming of Settlements had been busy since my last visit. But Twodot is still on the map, I learn, Giltedge is unaffected by the depression, and in spite of Roosevelt's warnings Goldbutte and Gold Creek still flaunt their riches. Sweet Grass, Rattlesnake, Big Arm, Beehive, Silverstar . . . Ho, hum! Is it because the towns of no other state lend themselves so readily to the lowest form of wit that your Club Contributor scorns a state with a laugh in nearly every name?

MAUD McCORMICK
Ames, Iowa

As one contributor to another.

Dear Atlantic, —

I am much impressed with what Albert Jay Nock says in 'Artemus Ward's America.' He speaks in such a pleasantly offhand way, and with such charm of personality, that some readers may not realize how trenchant is his thinking. It cuts deeper than most of our ponderous articles.

WILLIAM TRUFANT FOSTER
Ashland, New Hampshire